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EUROSYSTEM

Green transition in CESEE Where do we stand? – And how have we come here?


**Andreas Breitenfellner & Thomas Reininger
(Mathias Lahnsteiner & Jakob Schriefl)**

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Foreign Research Division
www.oenb.at

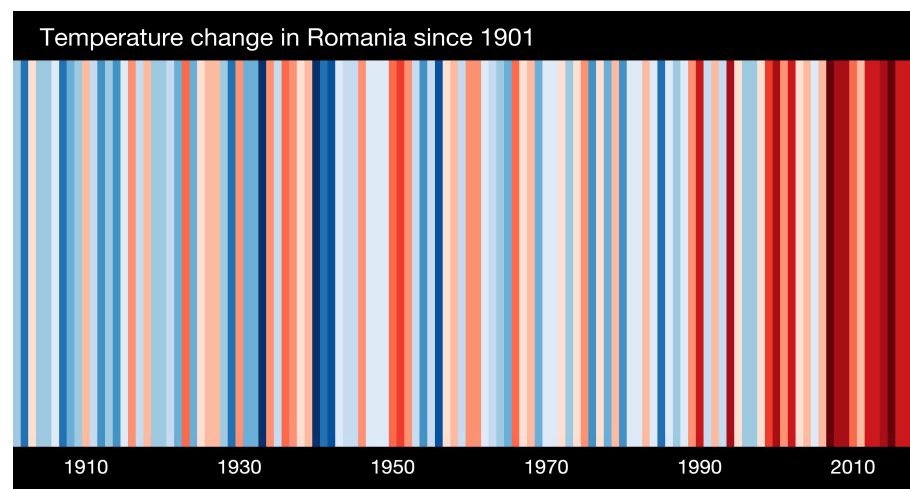
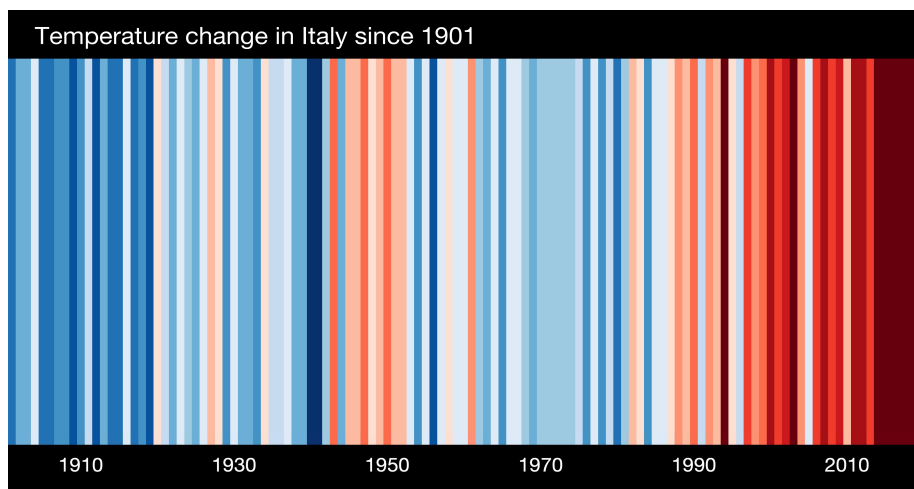
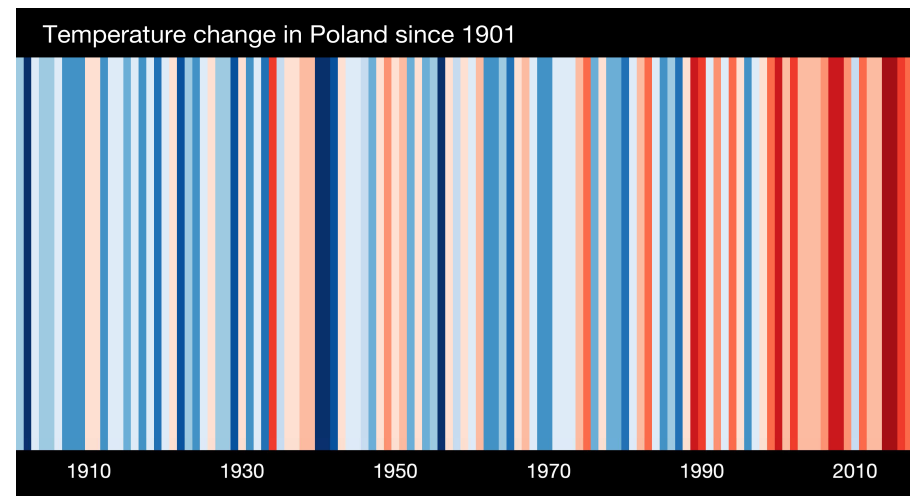
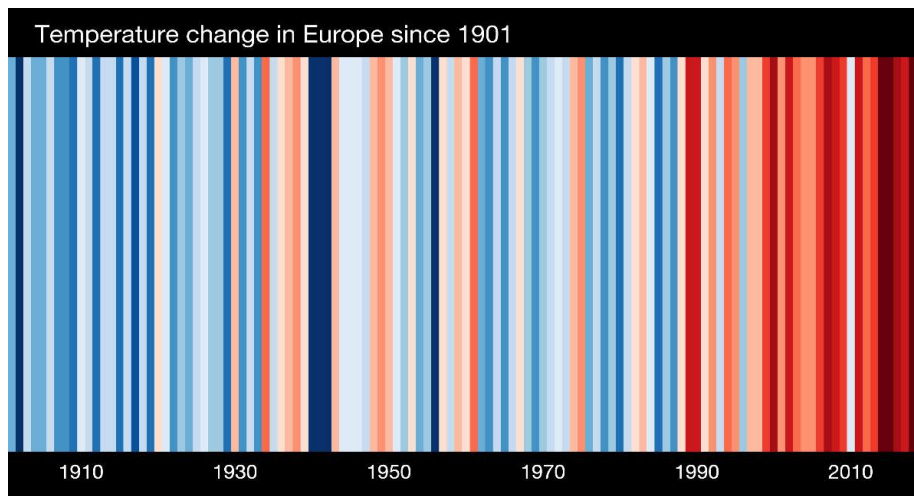


- Motivation: CESEEs „**first transition**“ & its climate vulnerability
- ... EU's necessary **green transition**
- How have **GHG emissions** evolved in the region, in particular compared to other EU member states (MS)?
- Main features of its **energy system**
- Implicit and explicit **carbon pricing**
- **Paris Agreement** & consequences in CESEE
- **European strategies**: emission trade & effort sharing
- The way forward: **Green Deal** & policy options
- **Conclusions**

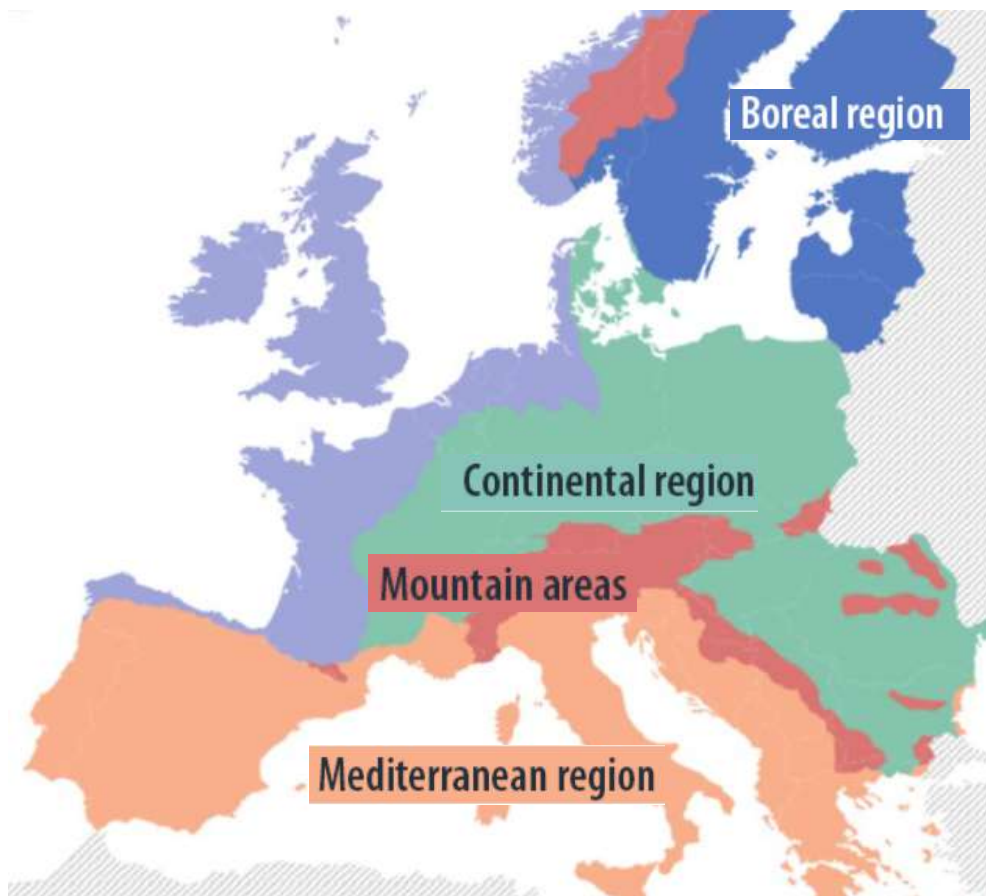


Opinions expressed do not necessarily reflect the official viewpoint of OeNB or Eurosystem.

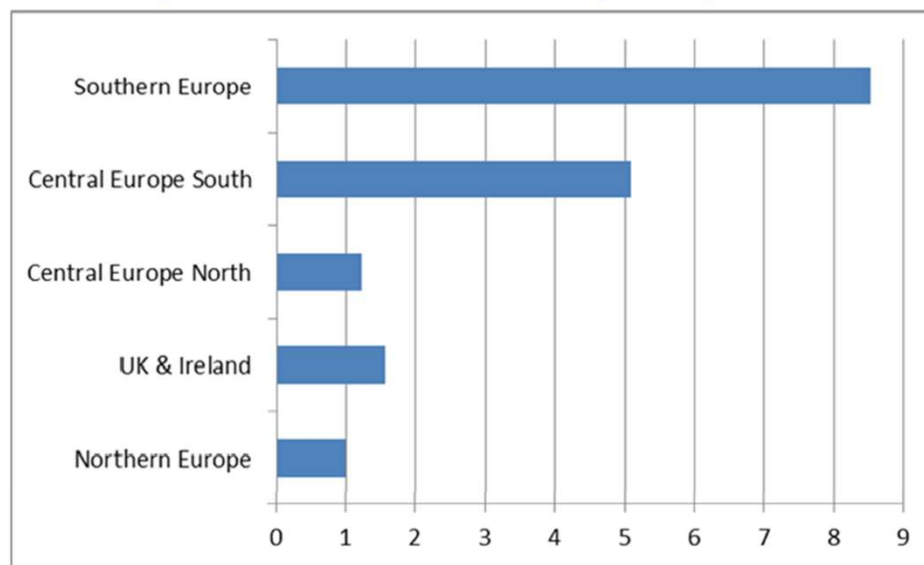
Globally average temperatures rose +1°C since pre-industrial level



Vulnerability to physical climate risks: CEE below but SEE above EU Ø



North-South divide - high warming scenario



Note: Welfare impact (% GDP) in Northern Europe = 1

Source: European Commission, JRC (2018)

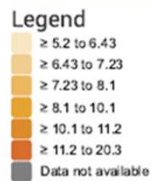
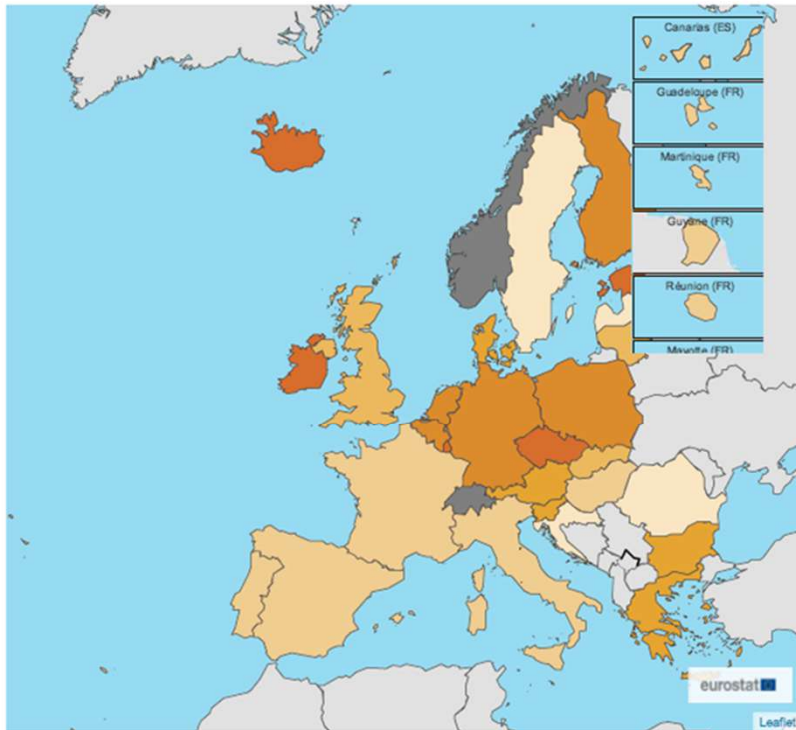
Source: European Parliament (2018)
www.oenb.at

EU MS in 2019: GHG emissions per capita & energy intensity of economy

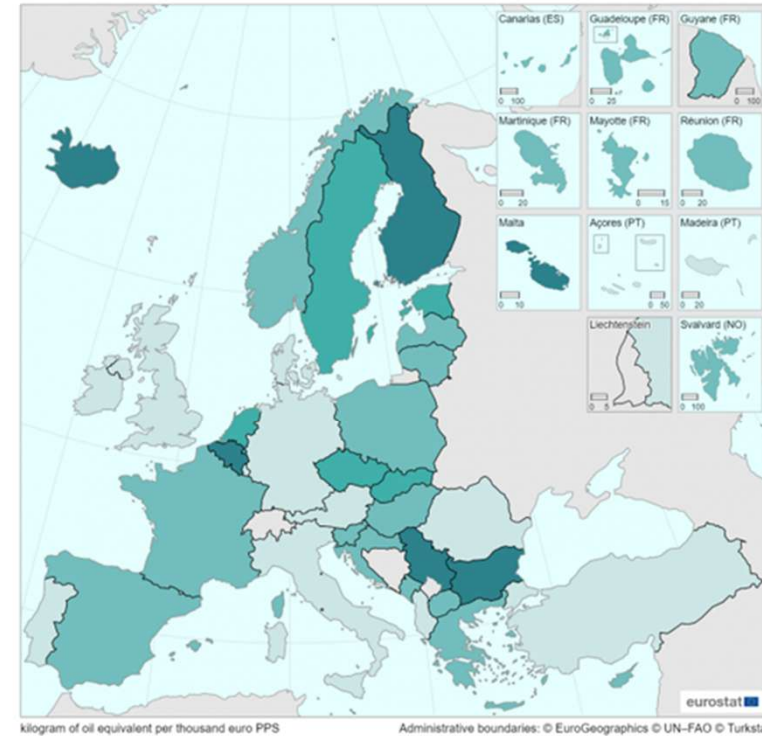


Greenhouse gas emissions per capita

Geopolitical entity (reporting) / Time: 2019 Time frequency: Annual

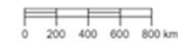


Energy intensity of the economy, 2019



kilogram of oil equivalent per thousand euro PPS

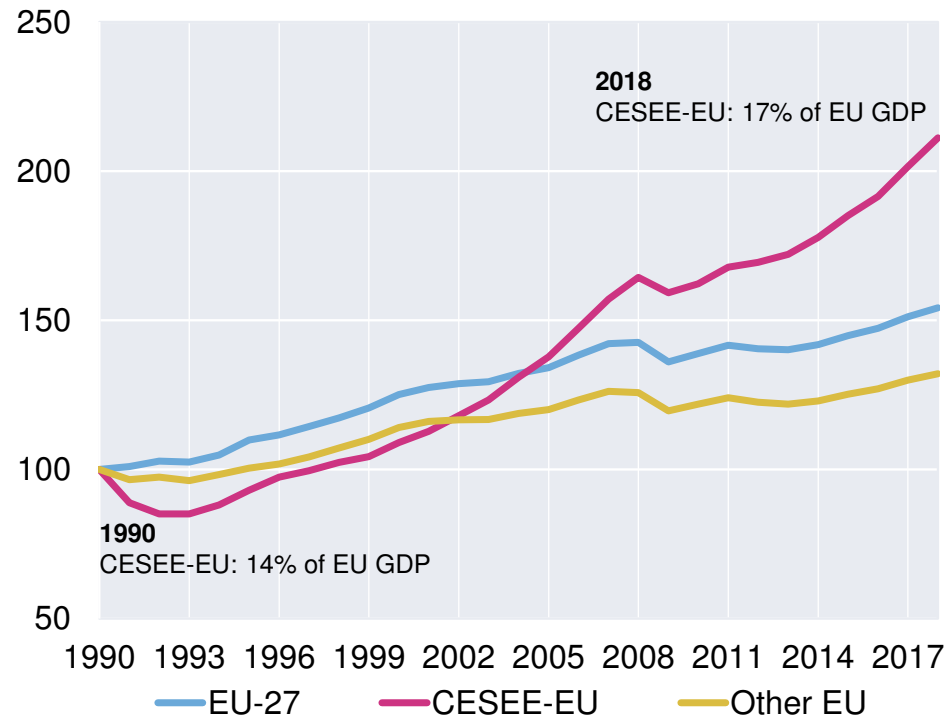
Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat - IMAGE, 05/2021



Transition was a win-win process: CESEE's economic transition was decisive to lower its GHG emissions

GDP per capita at PPP

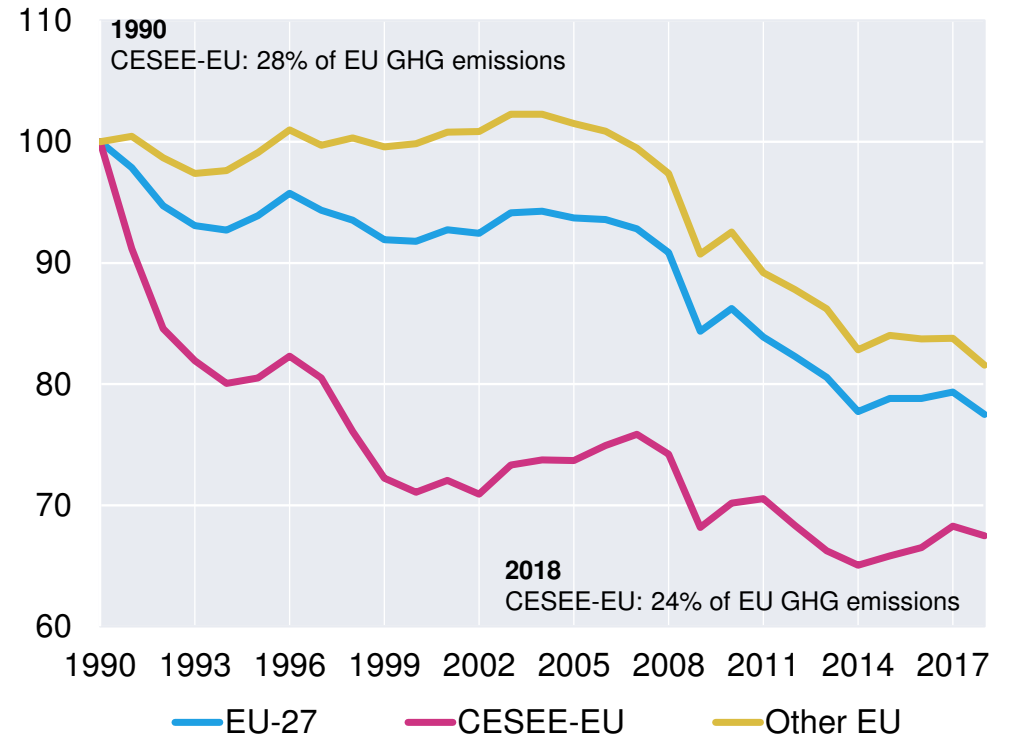
Index, 1990=100



Source: Euostat, wiiw, OeNB

Total GHG emissions without LULUCF

Index, 1990=100



Source: UNFCCC.

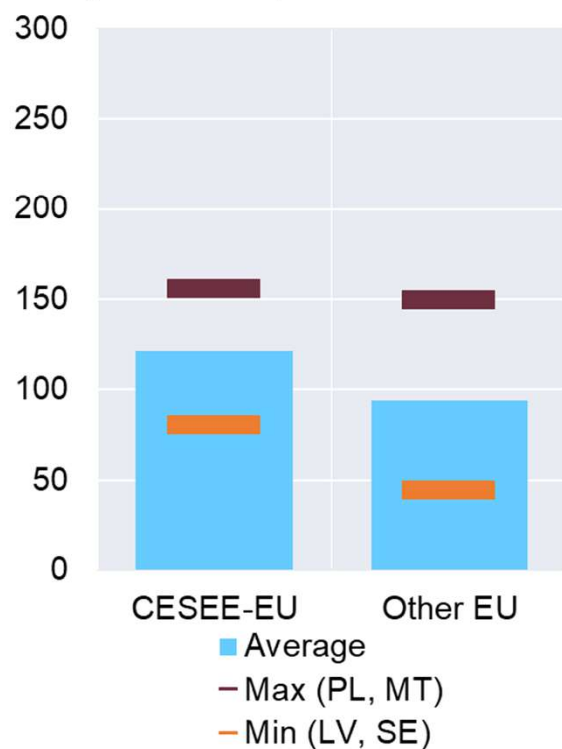
Note: LULUCF= Land Use, Land-Use Change and Forestry

1990: Decomposition of GHG emissions per capita:

An unfavorable starting position – high emission intensity and high energy intensity

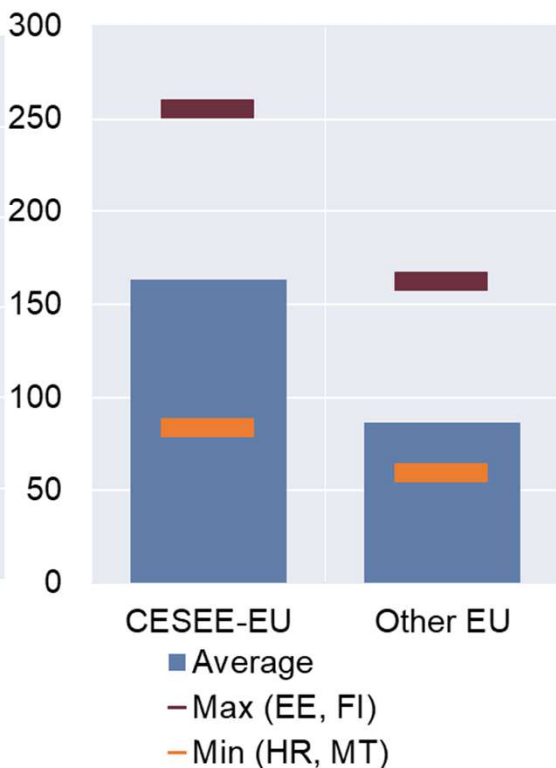
GHG/energy use

Index, EU-27=100, 1990



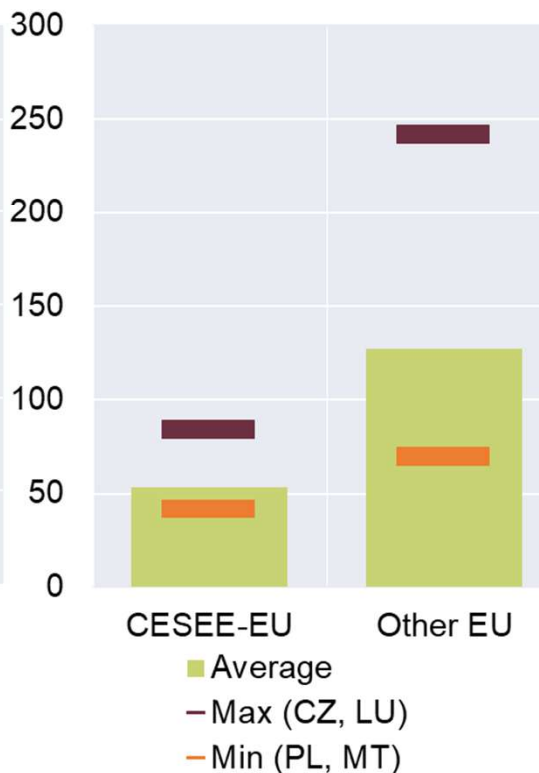
Energy use/GDP

Index, EU-27=100, 1990



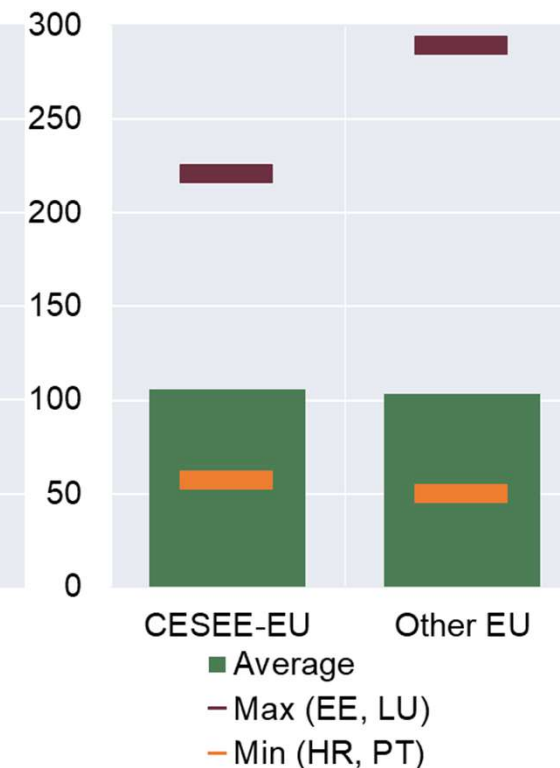
GDP (PPP) per capita

Index, EU-27=100, 1990



GHG per capita

Index, EU-27=100, 1990

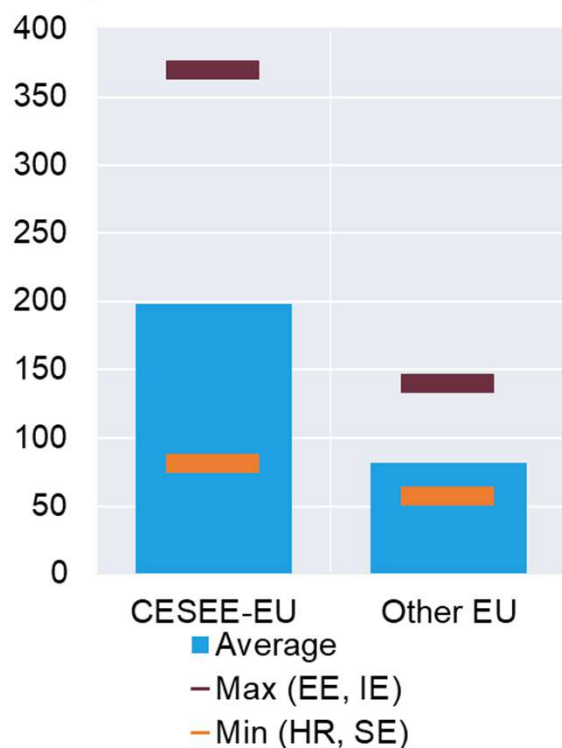


Source: UNFCCC, Eurostat, wiiw, OeNB.

1990-2018: Another convergence to a moving target (relative to 1990 level): The convergence of GDP's carbon intensity! – But not completed yet ...

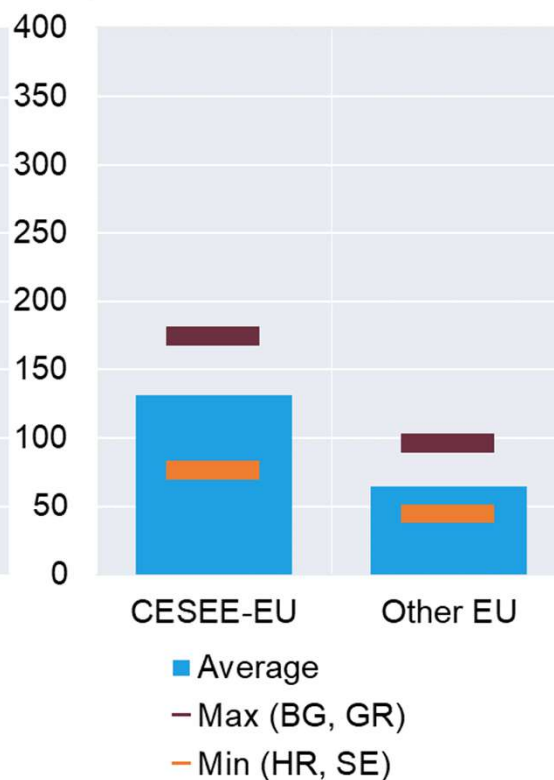
GHG/GDP, 1990

Index, EU-27/1990=100



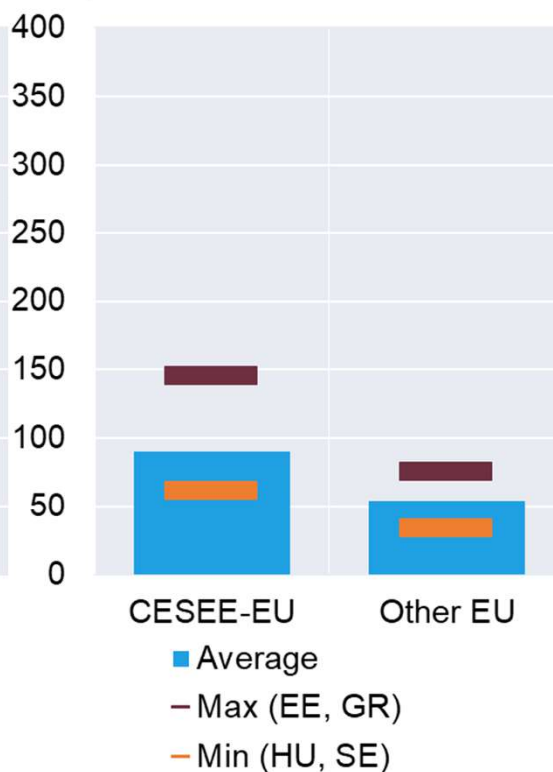
GHG/GDP, 2000

Index, EU-27/1990=100



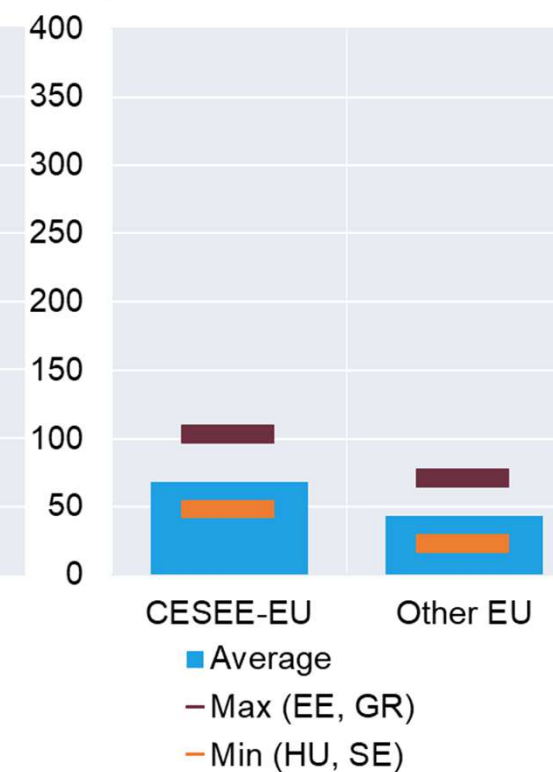
GHG/GDP, 2010

Index, EU-27/1990=100



GHG/GDP, 2018

Index, EU-27/1990=100



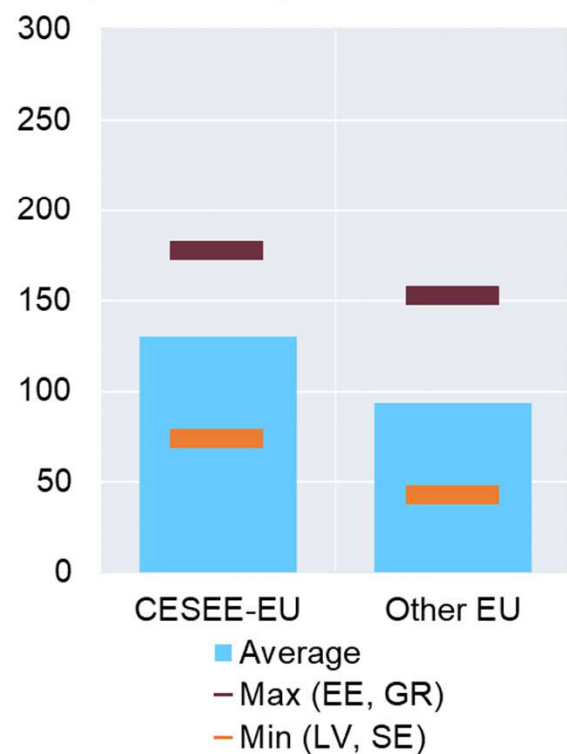
Source: UNFCCC, Eurostat, wiiw, OeNB.

2018: Still scope for improvement: CESEE's higher carbon intensity of GDP leads to slightly higher per-capita emissions despite lower per-capita income



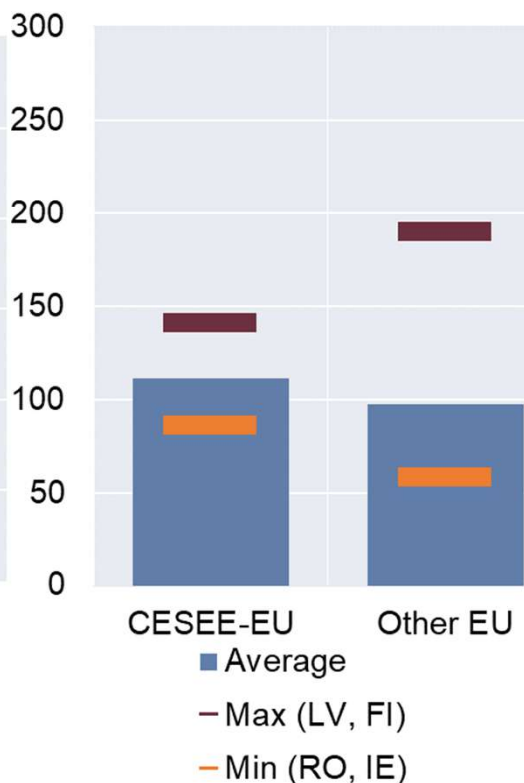
GHG/energy use

Index, EU-27=100, 2018



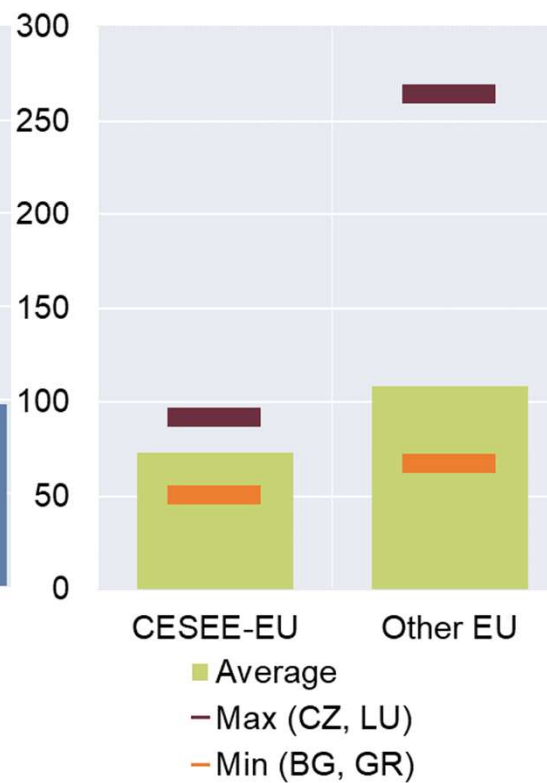
Energy use/GDP

Index, EU-27=100, 2018



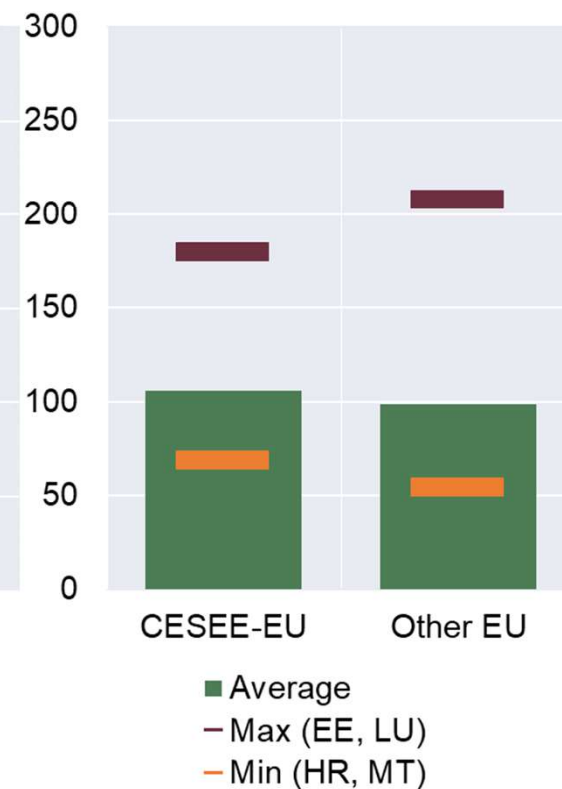
GDP (PPP) per capita

Index, EU-27=100, 2018



GHG per capita

Index, EU-27=100, 2018



Source: UNFCCC, Eurostat, wiiw, OeNB.

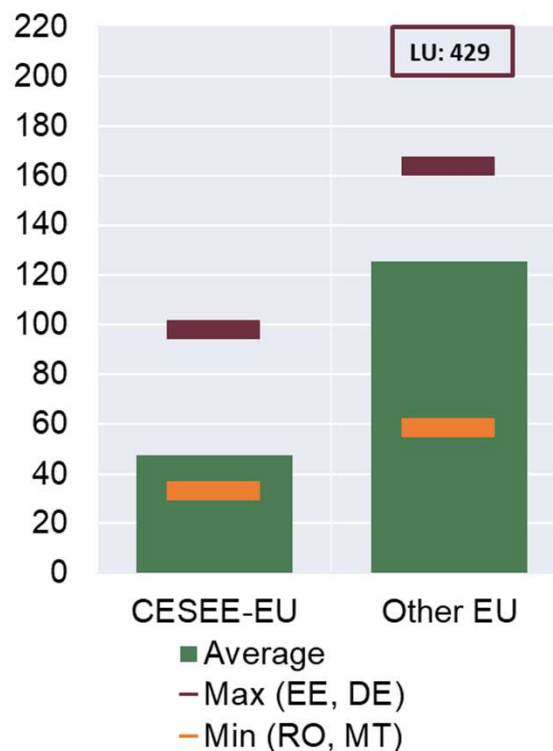
CESEE's transport sector emissions per capita:

1990-2018: Strong rise since 2000, reaching the EU27/1990-level in 2018



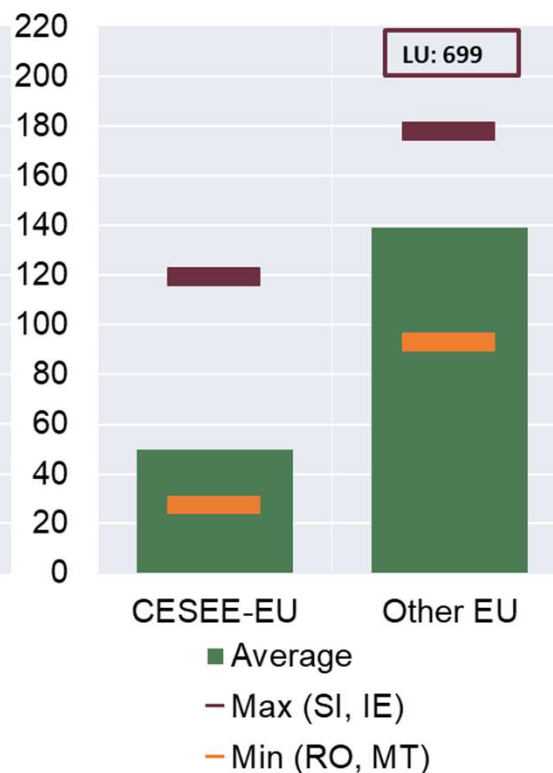
Transp. em. p.c., 1990

Index, EU-27/1990=100



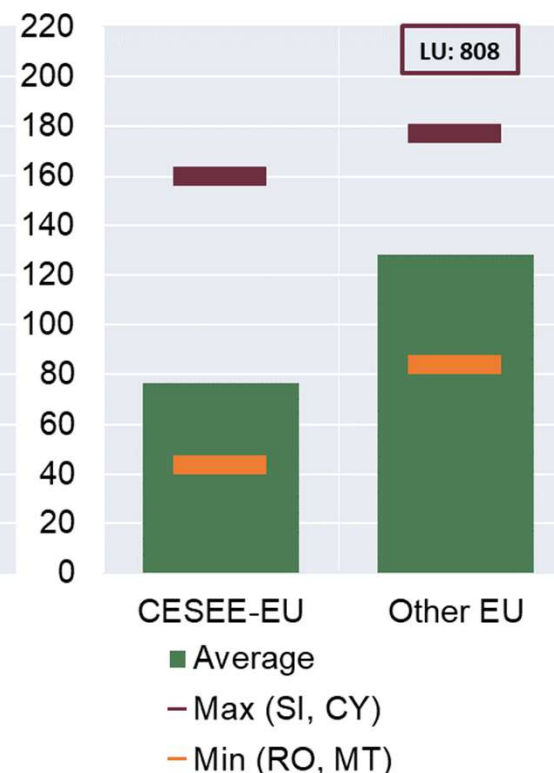
Transp. em. p.c., 2000

Index, EU-27/1990=100



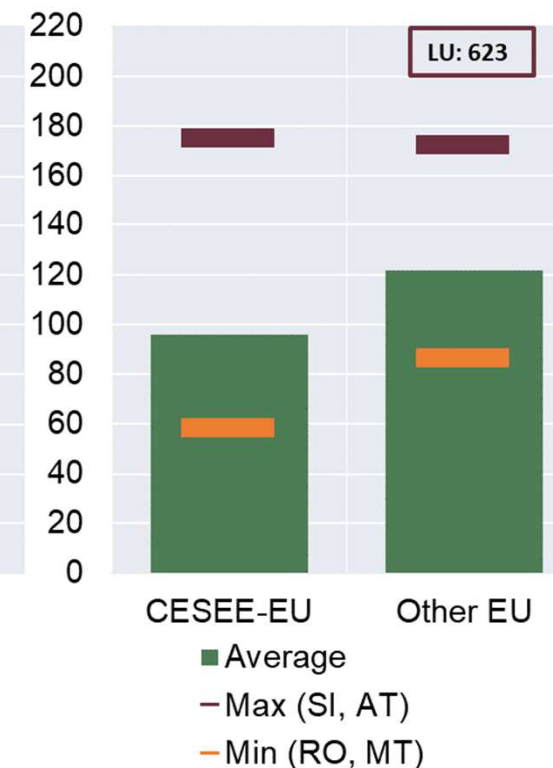
Transp. em. p.c., 2010

Index, EU-27/1990=100



Transp. em. p.c., 2018

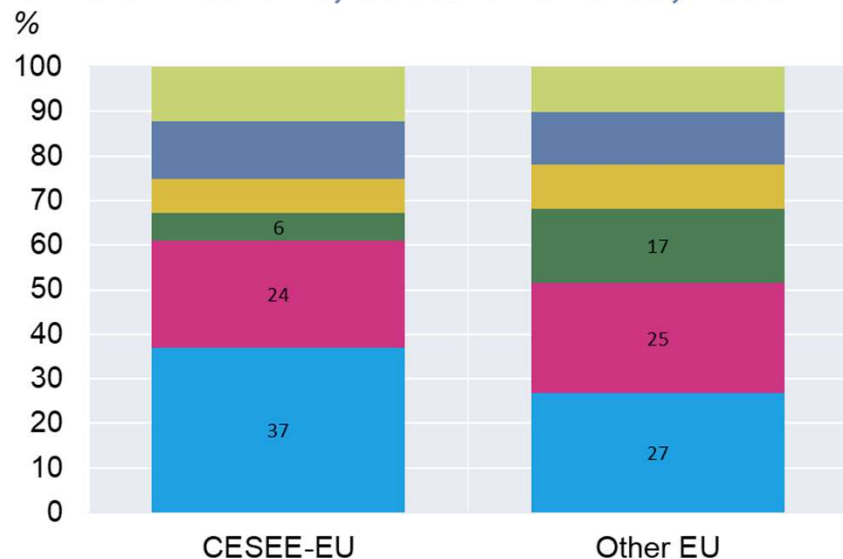
Index, EU-27/1990=100



Source: UNFCCC, Eurostat, OeNB.

Transport emissions' share in total emissions has risen in both sub-regions, but particularly strongly in CESEE – yet share still lower than in other EU MS

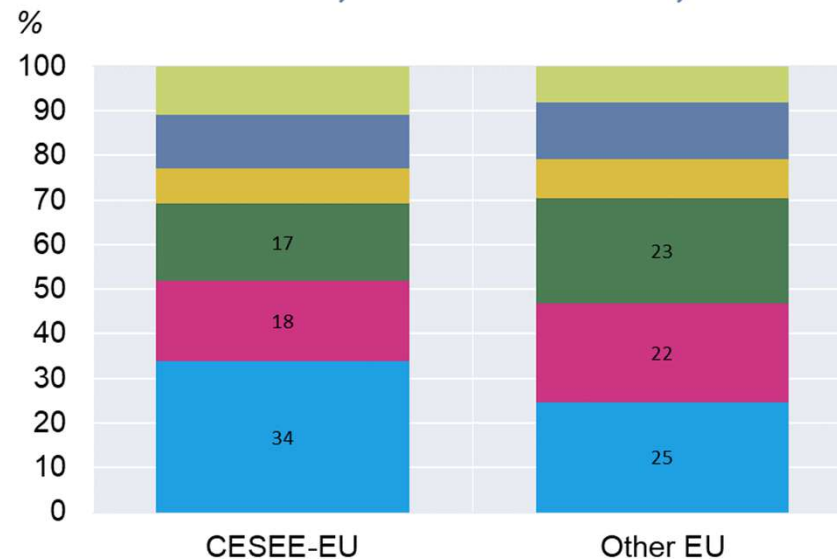
GHG emissions, sectoral shares, 1990



- Other items
- Agriculture (incl. energy use)
- Residential sector
- Transport sector
- Manufacturing, indust. proc. and product use
- Energy industries

Source: UNFCCC, OeNB.

GHG emissions, sectoral shares, 2018

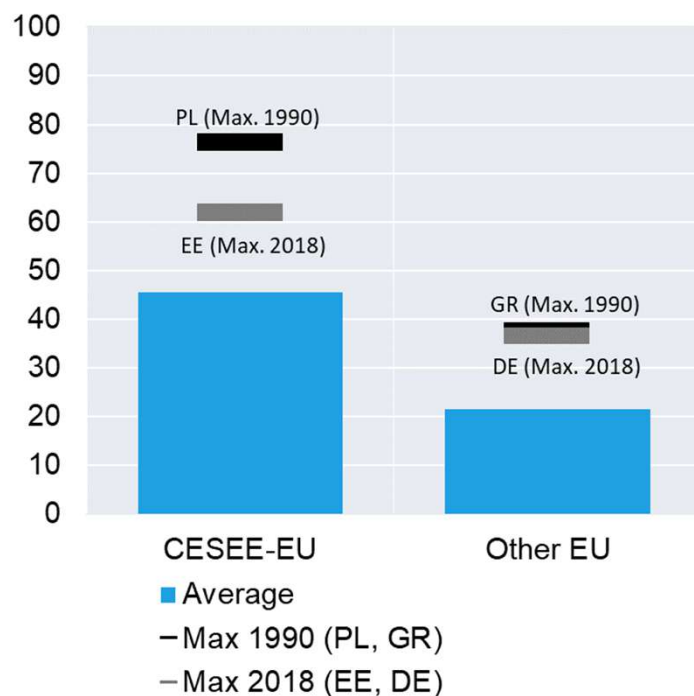


- Other items
- Agriculture (incl. energy use)
- Residential sector
- Transport sector
- Manufacturing, indust. proc. and product use
- Energy industries

Source: UNFCCC, OeNB.

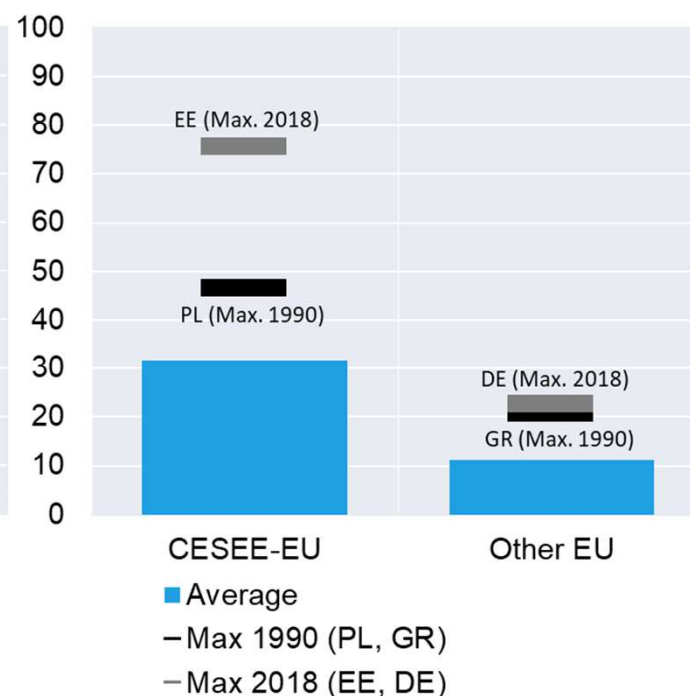
The share of coal in total energy supply has declined since 1990, both in CESEE EU and in other EU, with still higher share of coal in CESEE

Share of coal in total energy supply
%, 1990



Source: IEA, OeNB.

Share of coal in total energy supply
%, 2018



Source: IEA, OeNB.

- Decline in CESEE EU **exacerbated by decline in total energy supply by 18%** (vs. 5% increase in other EU).
- **Allocation of EU27's coal use:**
 - CESEE EU 41%
 - DE 32%, PL 23%, CZ 7%
- **New coal plants in EU27 2018-2020:**
 - Only in DE, PL and CZ
 - Only in PL new capacities exceed retired old capacities
- **Coal mines** operate in DE, GR and in PL, CZ, RO, BG, HU;
 - With **new coal mine projects** proposed in PL, CZ, RO.
- **Total energy supply's import share:**
 - CESEE EU: 42%
 - Other EU: 60%

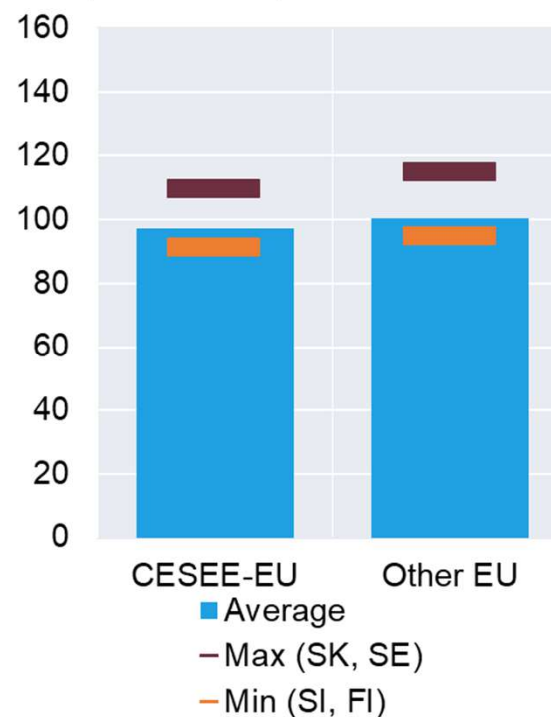
Energy prices excluding taxes:

Nominal energy prices in CESEE already quite close to levels in other EU MS...



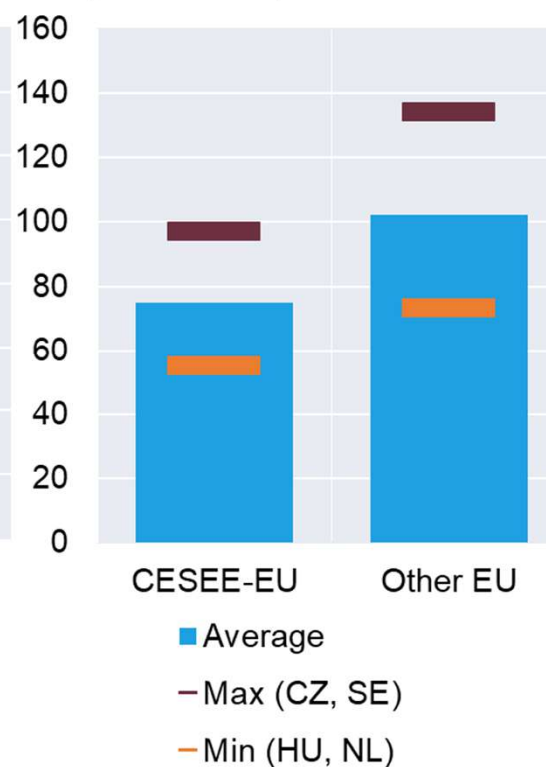
Diesel price hh (nom.)

Index, EU-22=100, 2018



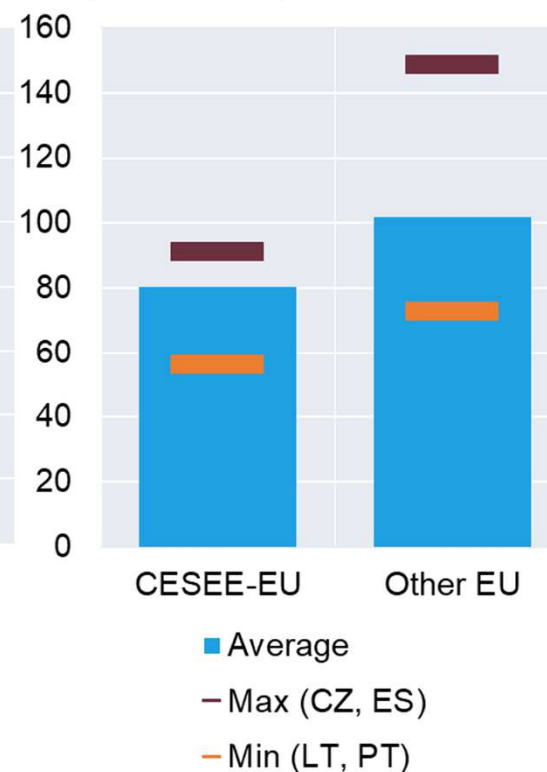
Nat. gas price hh (nom.)

Index, EU-22=100, 2018



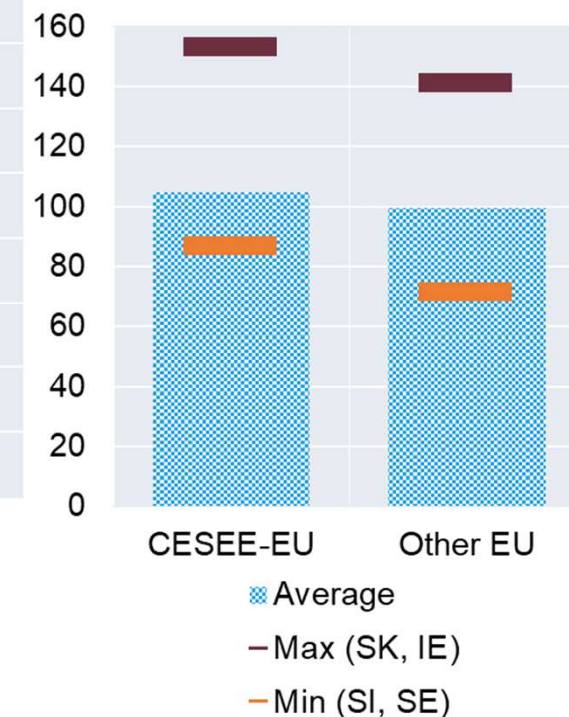
Electr. price hh (nom.)

Index, EU-22=100, 2018



Electr. price ind. (nom.)

Index, EU-22=100=55% of hh price, 2018



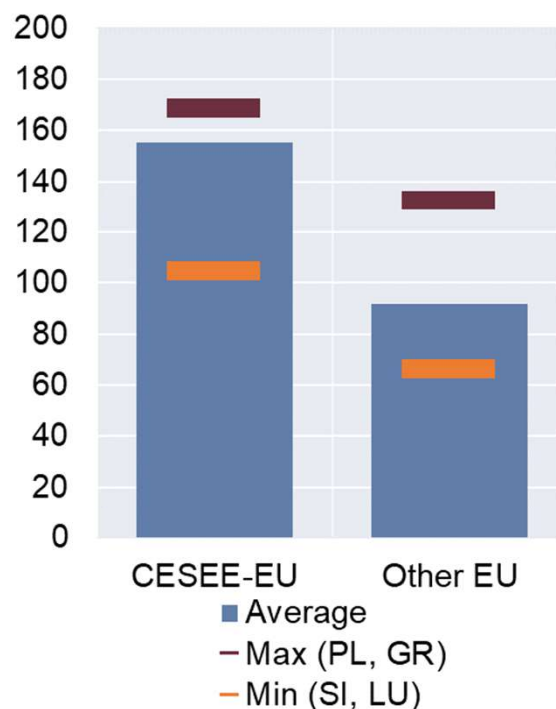
Source: IEA, OeNB. Note: Excl. BG, HR, RO, CY and MT.

While real energy prices (excl. taxes) in CESEE above those in other EU MS



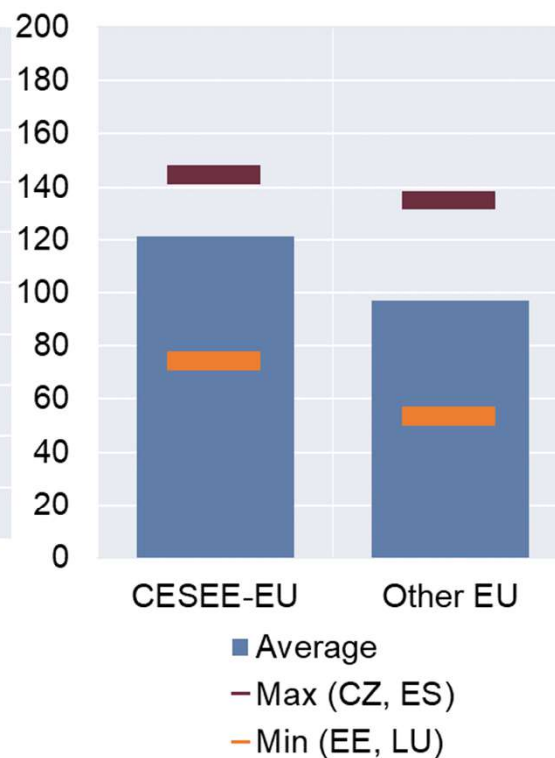
Diesel price hh (real)

Index, EU-22=100, 2018



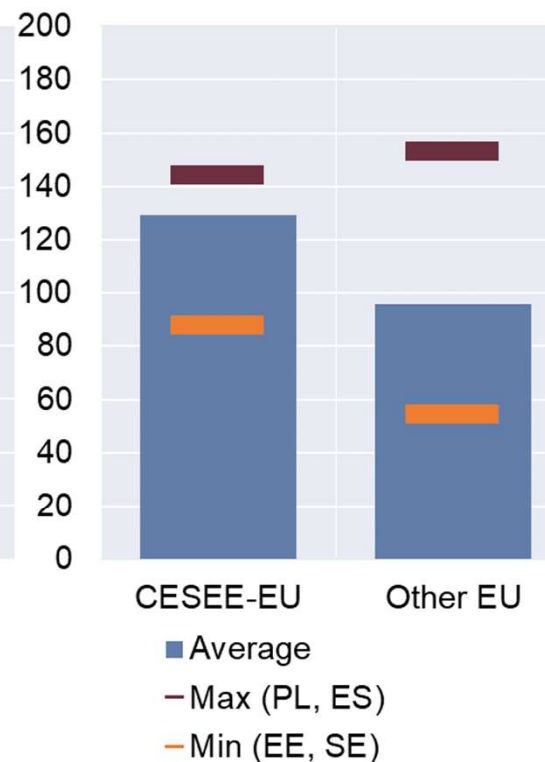
Nat. gas price hh (real)

Index, EU-22=100, 2018



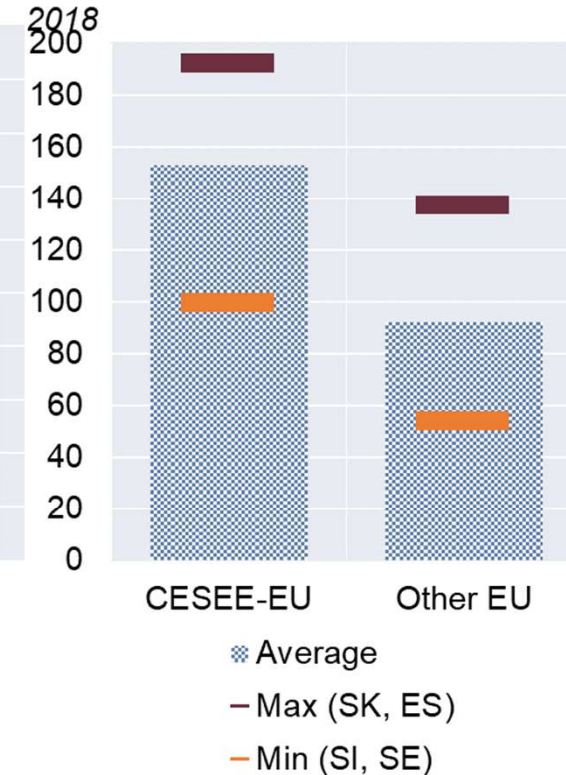
Electr. price hh (real)

Index, EU-22=100, 2018



Electr. price ind. (real)

Index, EU-22=100=57% of hh price, 2018

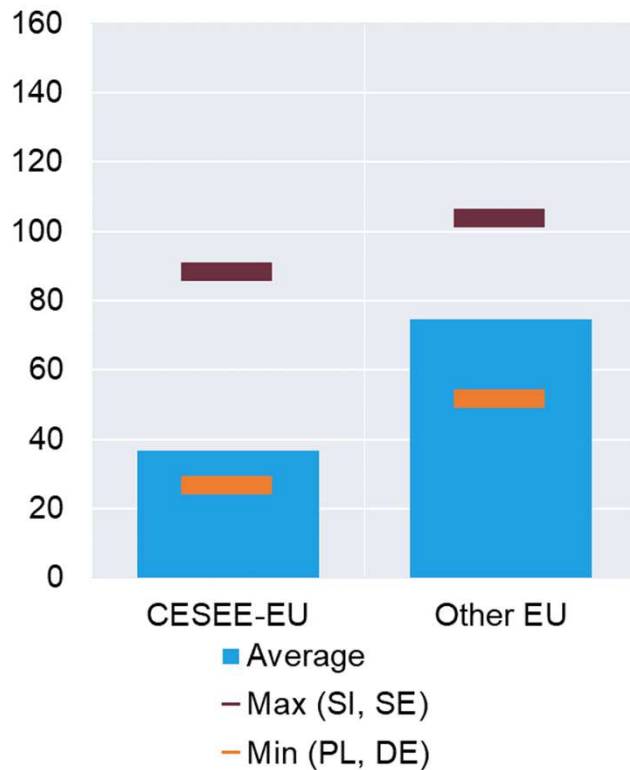


Source: IEA, OeNB. Note: Excl. BG, HR, RO, CY and MT.

Co2 taxation: CESEE applies lower CO2 taxes in both nominal and real terms on average, but wider divergence than within other EU MS €NB

Co2 taxation (nom.)

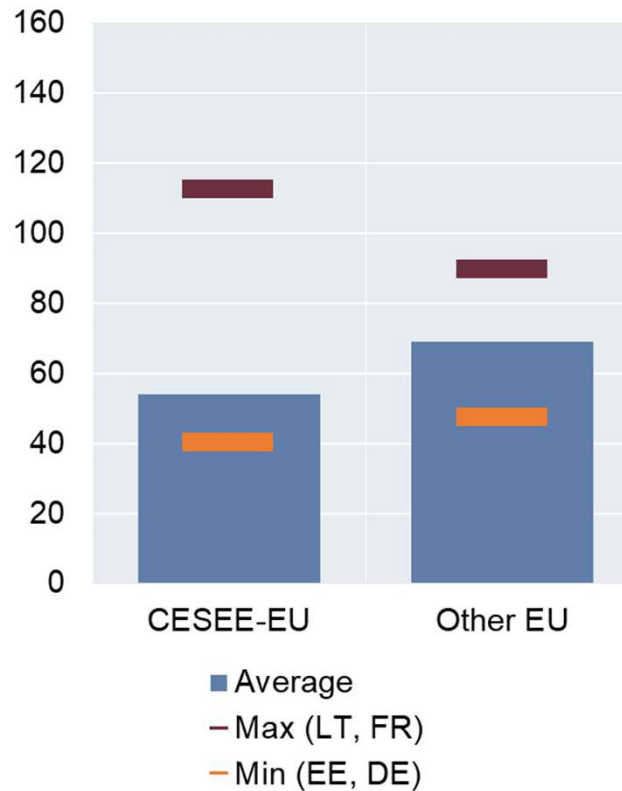
EUR per t Co2, 2018



Source: IEA, OeNB.

Co2 taxation (real)

EUR at PPP per t Co2, 2018



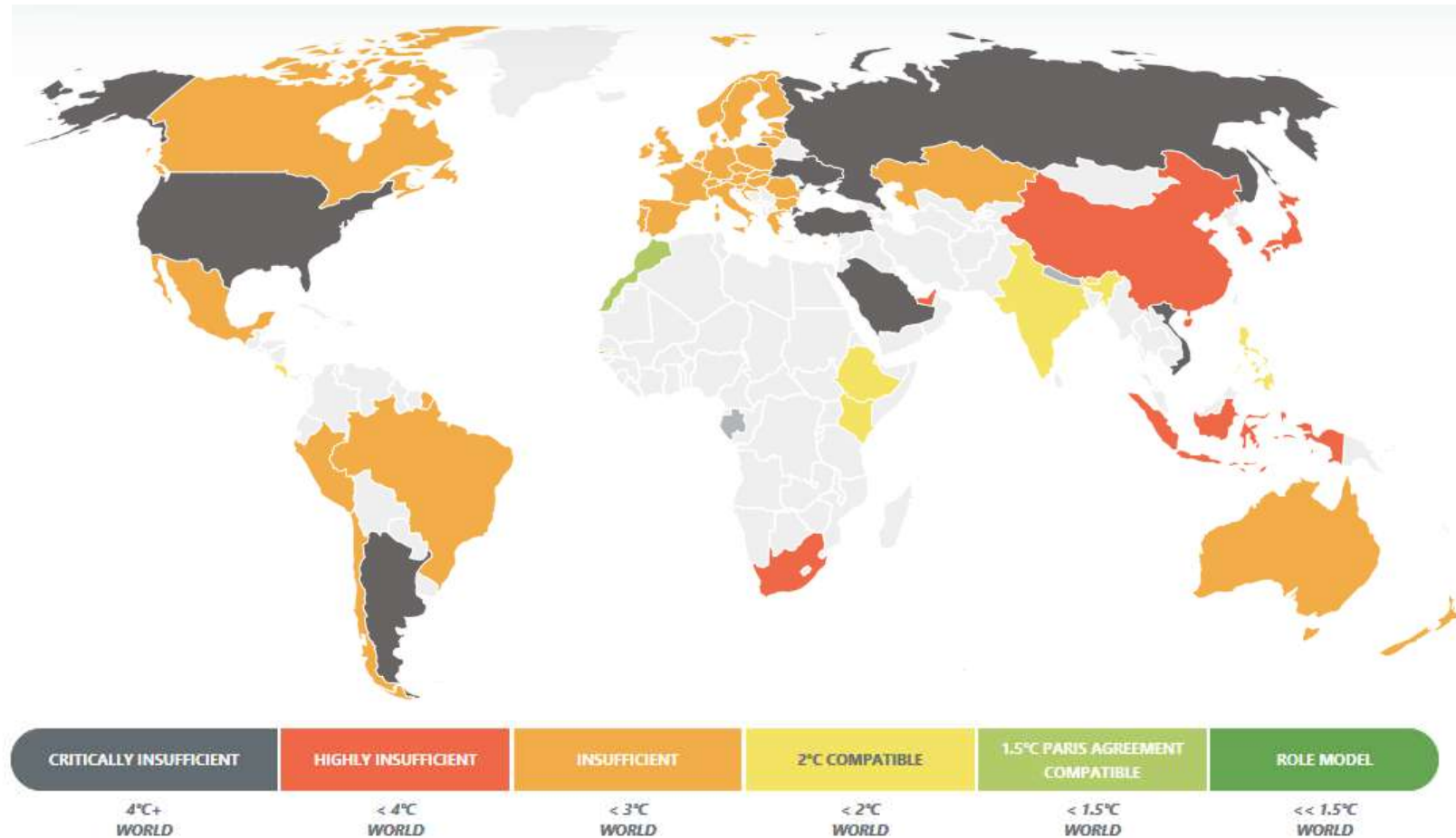
Lower average CO2 tax results mainly from two sectors:

- Residential & commercial buildings
- Electricity production
The size of this sector's emissions share in total emissions is relevant, as almost all of this sector's emissions are covered by ETS, thus having zero CO2 tax.



- Legally binding **universal agreement**
- **Ambitious global long-term goals**
 - Well-below 2°C – ideally 1.5°C
 - Peaking GHG emissions asap
 - **Climate neutrality 2nd half of century**
 - Making financial flows consistent
- **Nationally Defined Contributions** – 5-year ambition cycle
- Enhanced transparency
- Mitigation and adaptation
- Support for poor and vulnerable countries
- → **Currently 191 countries signed**

Paris 2015: country commitments are not enough (yet)



Source: Climate Action Tracker

EU targets prior to the Green Deal

Targets for 2030 currently in force, after the Paris Agreement:

	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

Source: European Commission (2019)

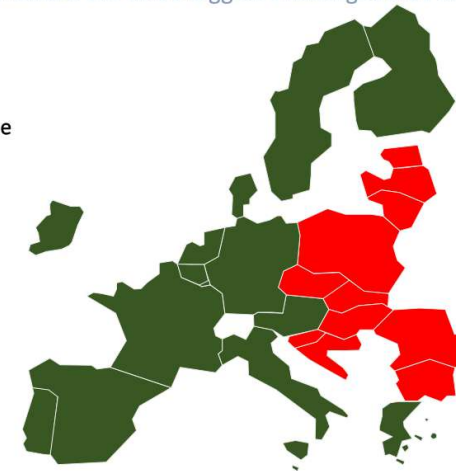
Climate change more largely perceived as a challenge in Western Europe countries

In your opinion, what are the three biggest challenges that citizens in your country are currently facing?



CLIMATE CHANGE
Total Europe
33%

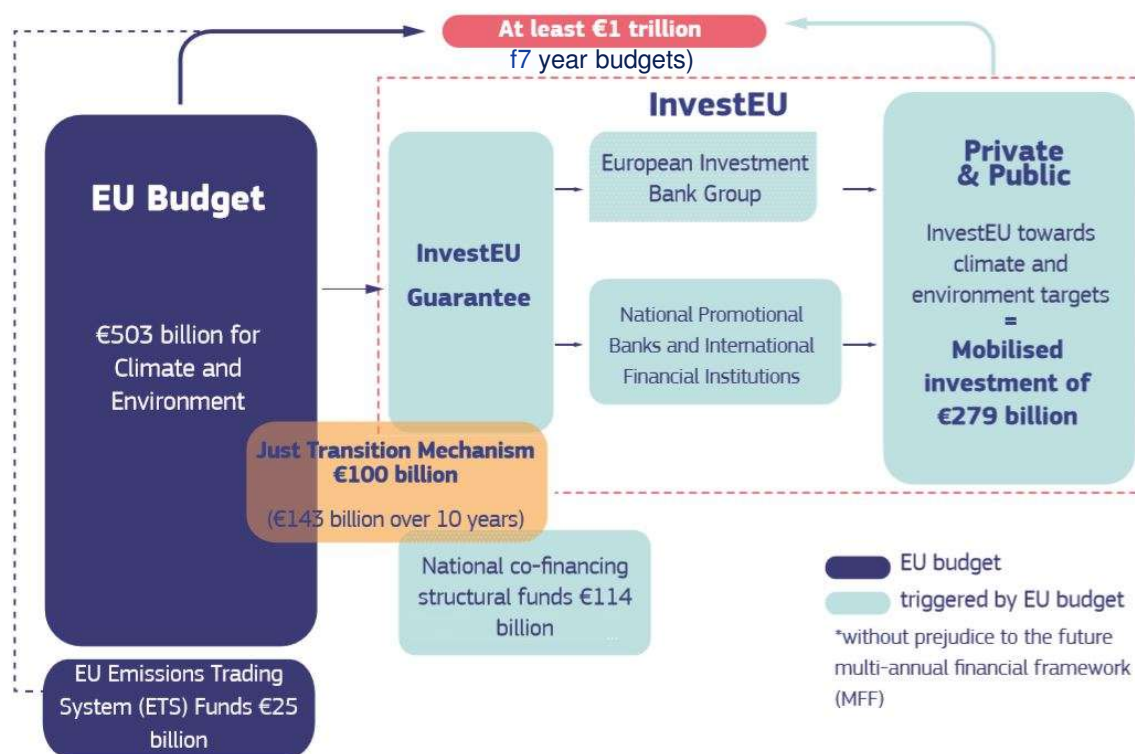
Western Europe
36%



Eastern Europe
22%

Source: EIB 2021

WHERE WILL THE MONEY COME FROM?



*The numbers shown here are net of any overlaps between climate, environmental and Just Transition Mechanism objectives.

Ambitious targets:

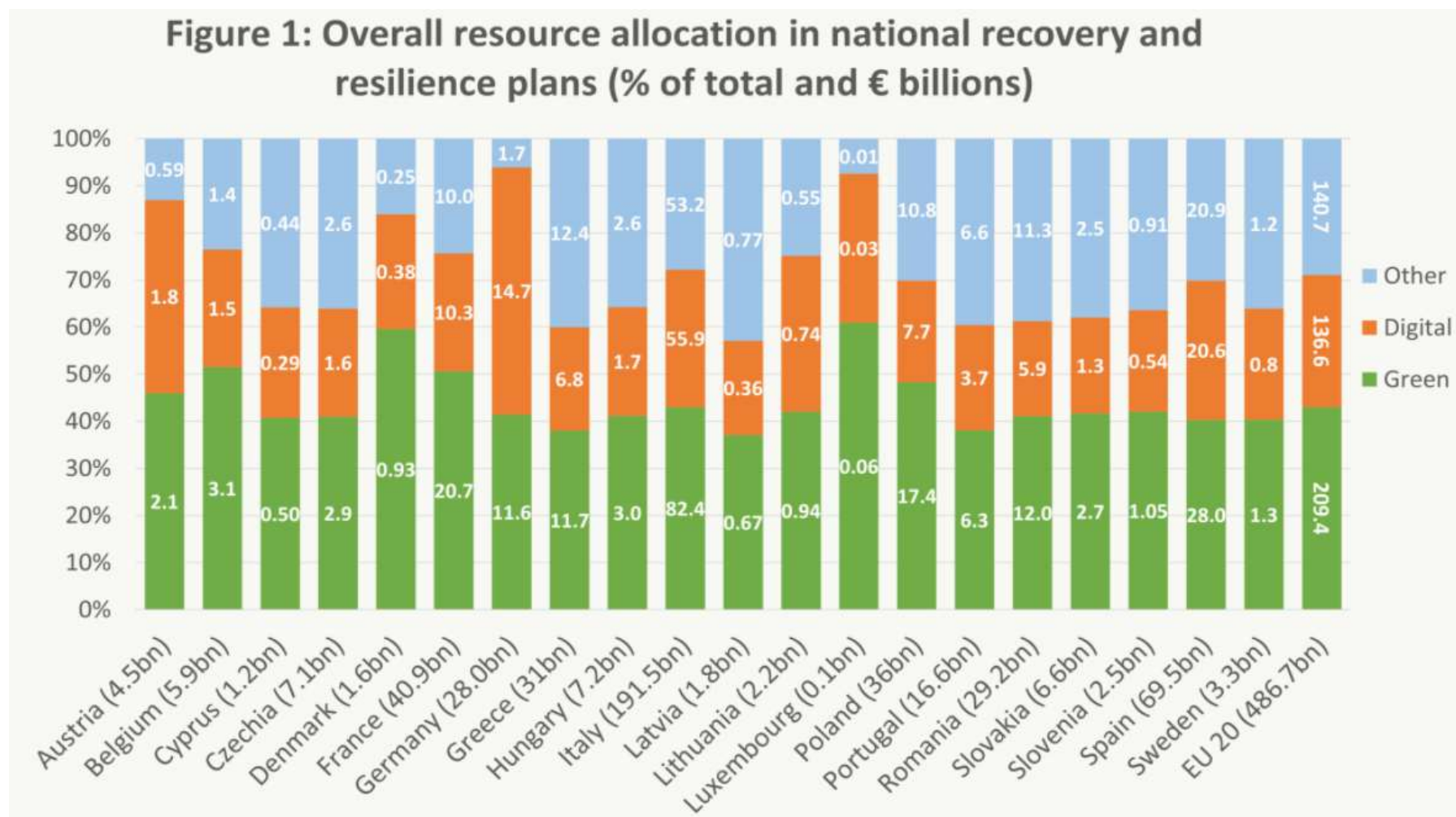
- Net-zero in 2050
- 55% emissions cut by 2030

Amplify finance:

- € 1 tr until 2030 leveraged from budget 2021-2027
 - + € 1 tr from EIB (partly overlapping)
 - + COVID-19 Recovery plan: At least € 277 bn NextGenerationEU fund → climate action
- € 350 bn p.a. extra (private & public capital mobilized)

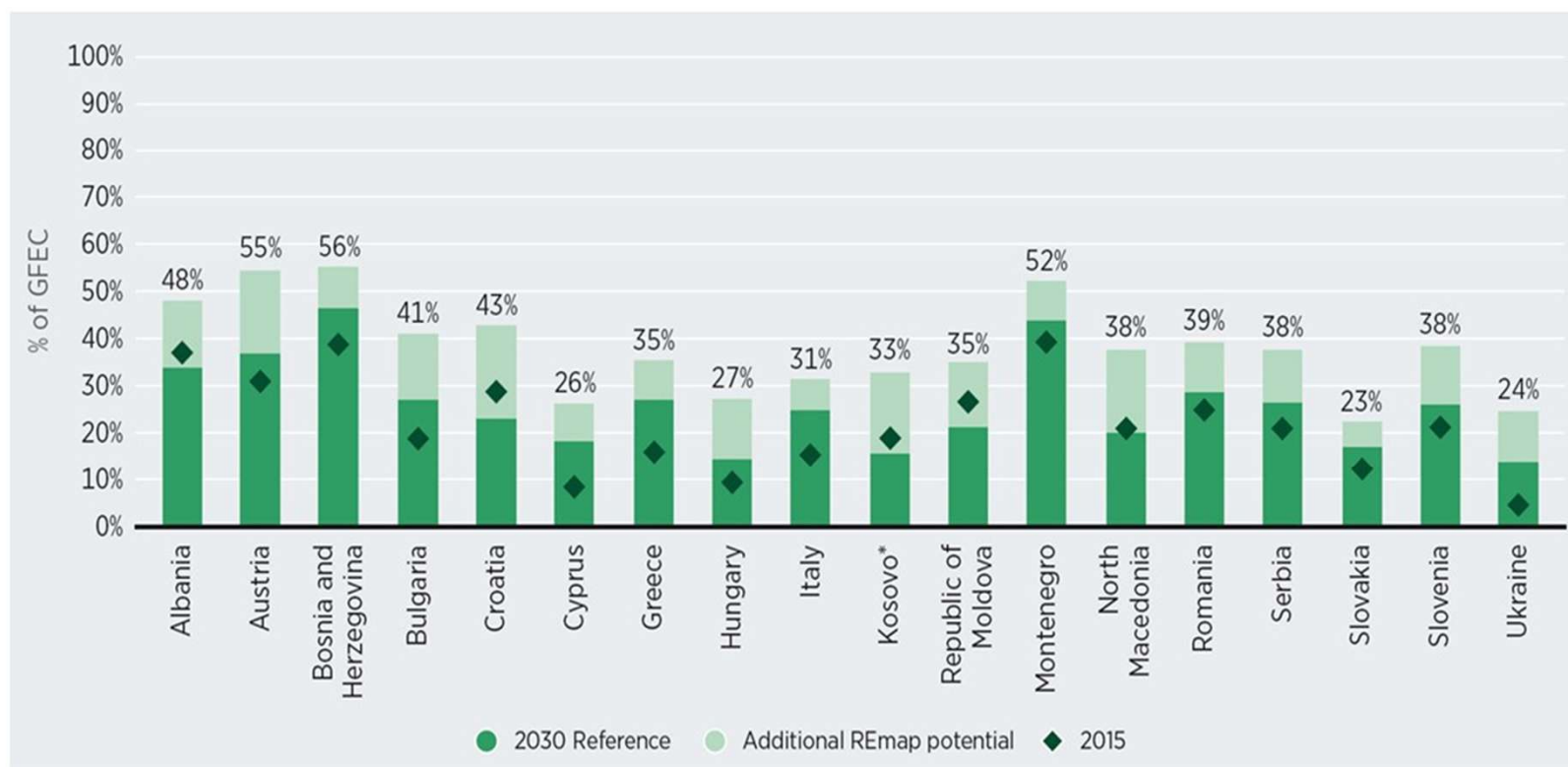
National Recovery and Resilience Plans (as submitted)

Figure 1: Overall resource allocation in national recovery and resilience plans (% of total and € billions)



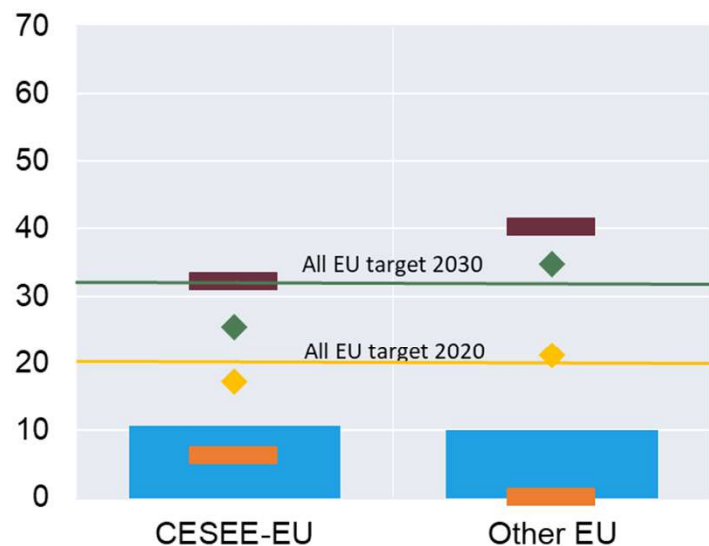
Share of energy from renewables: Potential versus targets for 2030

All CESEC members have additional cost-effective potential beyond existing plans / projections.



Share of energy from renewable sources: Actual versus Targets: 2020 target (EU total 20%) likely met in CESEE and other EU, but 2030 target (32%)?

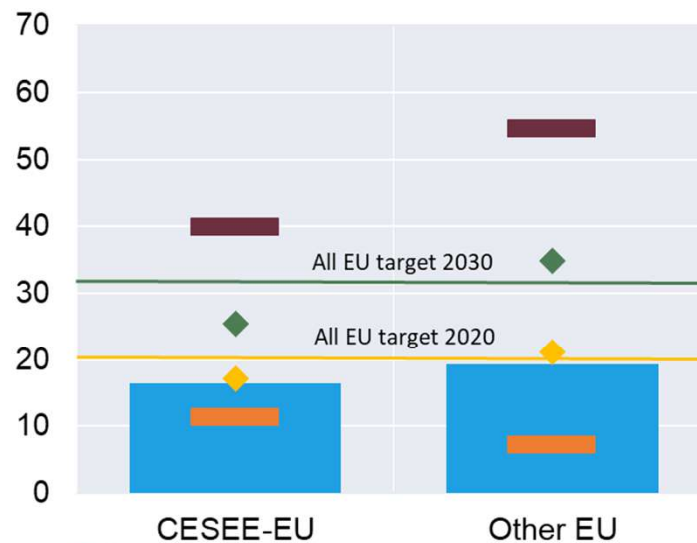
Share of renewables in fin. energy cons. %, 2005



- Average
- ◆ Implicit regional target 2030 (NECPs)
- ◆ Implicit regional target 2020
- Max (LV, SE)
- Min (SK, MT)

Source: Eurostat, OeNB.

Share of renewables in fin. energy cons. %, 2018



- Average
- ◆ Implicit regional target 2030 (NECPs)
- ◆ Implicit regional target 2020
- Max (LV, SE)
- Min (PL, NL)

Source: Eurostat, OeNB.

- **For 2020:** The **agreed** national targets (of 2009) for CESEE EU are **lower** than those for other EU on aggregate: 17% < 21%.
- **For 2030:** The **agreed** formula of 2018 for national targets implies an aggregate target of
 - 27.5% for CESEE EU and
 - 33.5% for other EU.
- **However,** the NECPs of most CESEE EU MS envisage **lower** national targets, implying an aggregate target of
 - 25.5% for CESEE EU and
 - 35.0% for other EU.

EU GHG emissions: Current targets, actual changes and required efforts

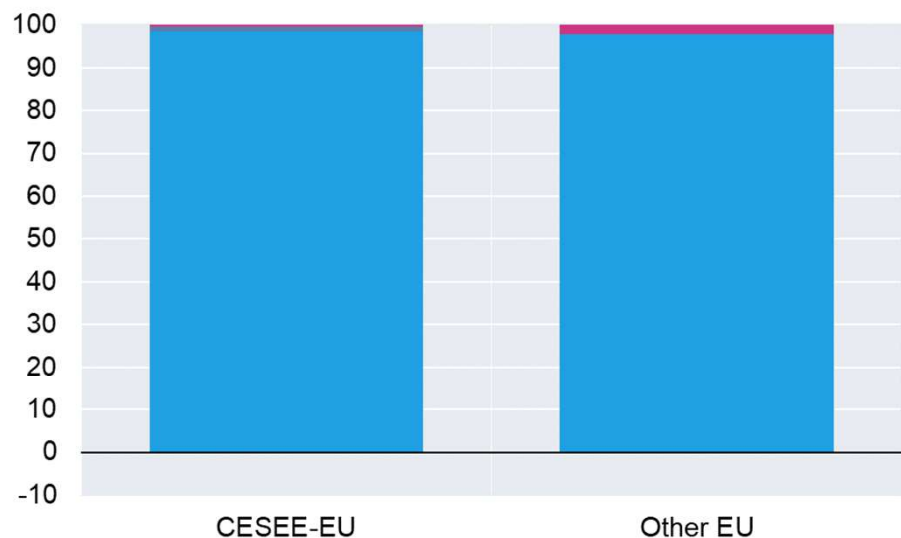


Change in %	EU-27			CESEE EU			Other EU		
	Total	ETS	Other	Total	ETS	Other	Total	ETS	Other
Actual:									
1990 to 2005	-6	-10	-3	-26	-33	-19	2	1	2
2020 Targets of 2007/2009, to reduce EU-28 emissions by 20% versus 1990:									
2005 to 2020	-13	-21	-8	-3	-21	14	-16	-21	-13
Actual:									
2005 to 2018	-17	-25	-12	-8	-19	1	-20	-27	-15
1990 to 2018	-23	-33	-14	-33	-45	-18	-18	-26	-13
2030 Targets of 2018, to reduce EU-28 emissions by 40% versus 1990:									
2005 to 2030	-35	-43	-30	-24	-43	-7	-38	-43	-34
implying:									
2018 to 2030	-21	-24	-19	-17	-30	-8	-22	-22	-22
1990 to 2030	-39	-49	-31	-44	-62	-25	-37	-43	-32
Note: Simplifying assumption that the ETS target is applied uniformly across MS.									
ETS covers energy industries (electricity and heat plants, petroleum refining) as well as energy for manufacturing and construction. Thus, other (i.e. non-ETS) covers inter alia transport, residential & commercial buildings, industrial processes and product use, agriculture, waste (outside heat plants).									
Source: UNFCCC, EU (ESR, ETS), OeNB.									

ETS allowances: In both CESEE and other EU MS, no substantial selling of allowances until 2013 and still below 50% of total

ETS allowances by type, 2005-2012

%, trading period 1&2

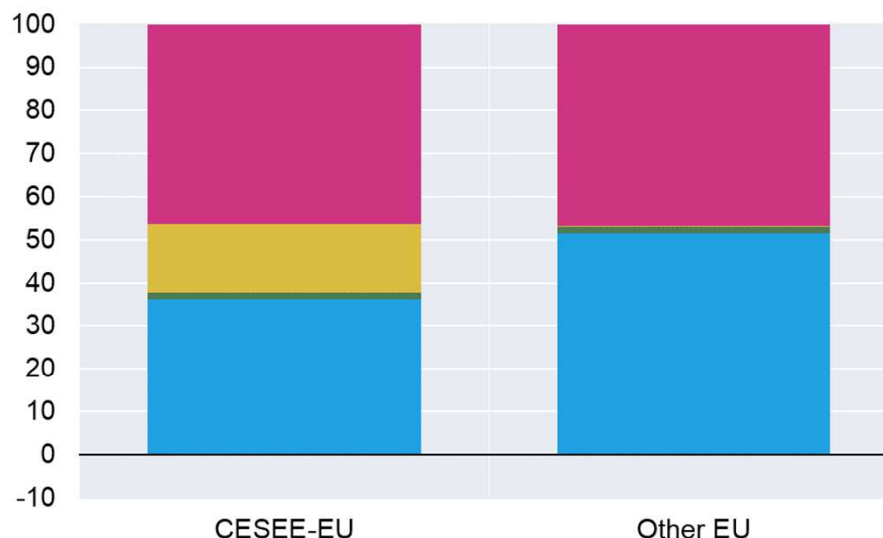


- Allowances auctioned or sold
- Correction to freely allocated allowances
- Free allocation for modernisation of electricity generation (Art. 10c)
- Free allocation from the new entrants reserve (Art. 10a(7))
- Free allocation to existing entities (Art. 10a(1))

Source: EU emission trading system data viewer.

ETS allowances by type, 2013-2020

%, trading period 3



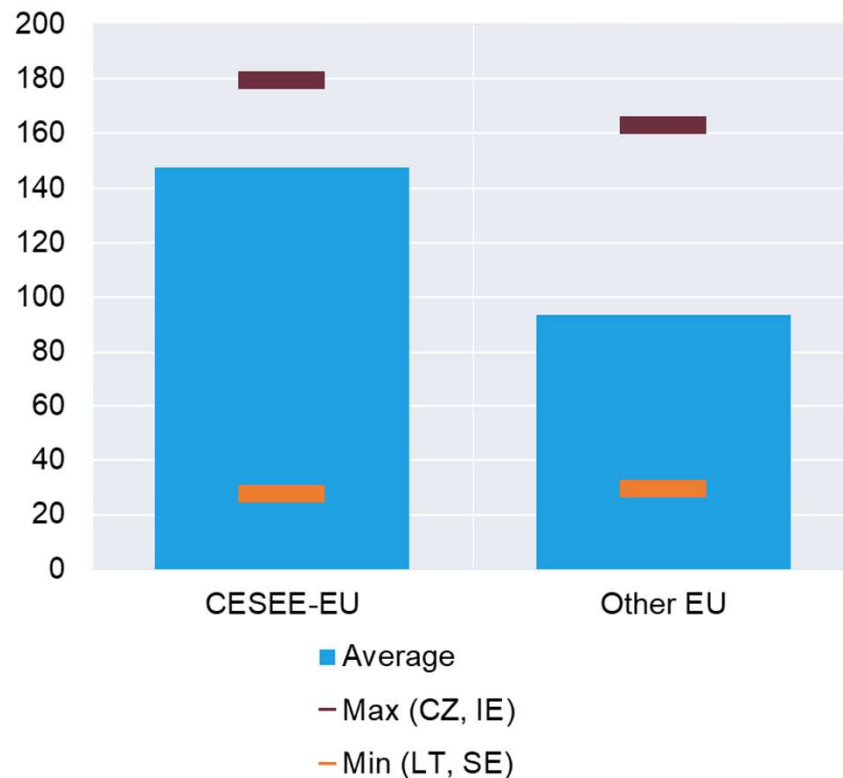
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- Free allocation to existing entities (Art. 10a(1))

Source: EU emission trading system data viewer.

Energy efficiency: Example of the residential sector

Carbon intensity per dwelling

Index, EU19=100, based on t Co2 per dwelling, 2018



Source: IEA, OeNB. Note: Excl. BG, HR, EE, LV, RO, SI, CY and MT.

- Discrepancy aggravated further
 - If comparison includes inter alia BG, RO, HR
 - If comparison based on square meter
- Decomposition shows that both factors contribute
 - Higher emission intensity and
 - Higher energy intensity
- This highlights the importance of the “Energy efficiency target”, envisaging increases of EU’s energy efficiency compared to 2007 baseline
 - By 20.0% until 2020
 - By 32.5% until 2030
- Indeed, from 2010 to 2018, energy intensity declined (i.e. energy efficiency increased) less in CESEE EU than in other EU.

Conclusions

- CESEE economies **not particularly vulnerable** to physical CC
- They are only **to some degree laggards**
- **During first decade of (first) transition** CESEE performed **strong emission reductions**
 - then reductions have been substantially **lower than before**
 - and lower than in **other EU** member states
- Both CESEE and other EU MS **must step up their efforts** in the coming years
- For CESEE, this would also offer huge **opportunities** for their economic **catching up**
- Good reasons to **appreciate renewables**: low costs, energy independence, etc.
 - (**Nuclear** energy is **not** even a bridging technology)
- **Modernize** the infrastructure to raise **energy efficiency**

Danke für Ihre Aufmerksamkeit

Thank you for your attention

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