

# Milestones in CZ and EU energy policy over the last 20 years and long-term policy priorities from the current perspective

*International multidisciplinary discussion seminar*

*21<sup>st</sup> of November 2022*

Hotel Amaris

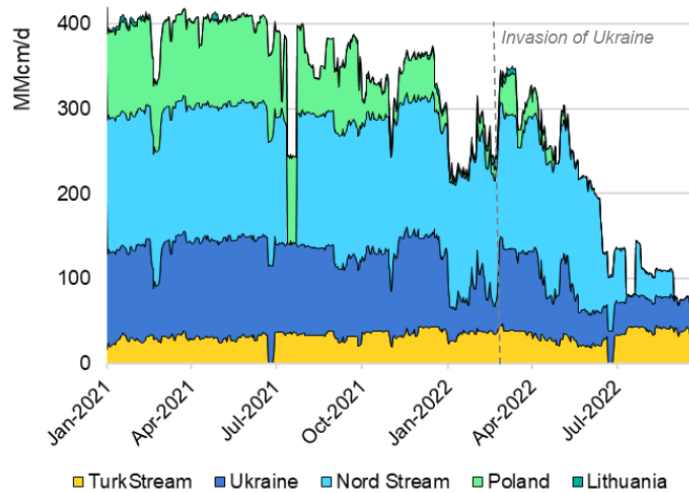


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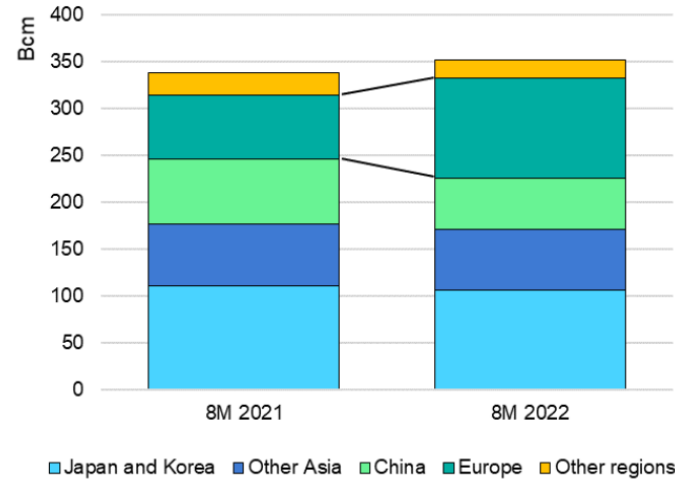
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# Perfect storm in the energy markets

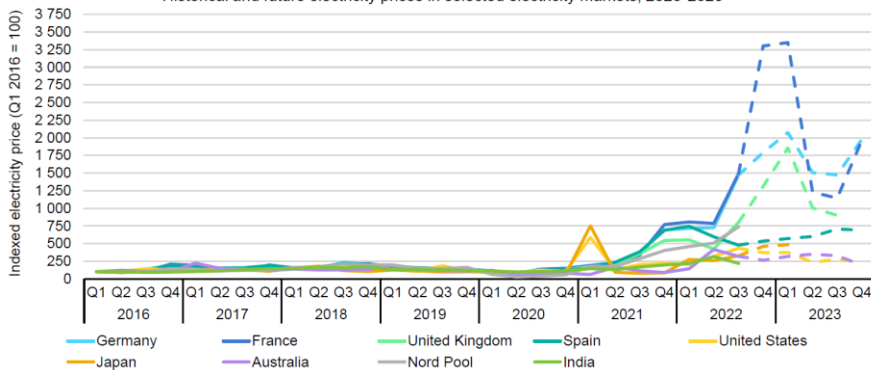
Russian gas pipeline flows to the EU and Türkiye, 2021-2022



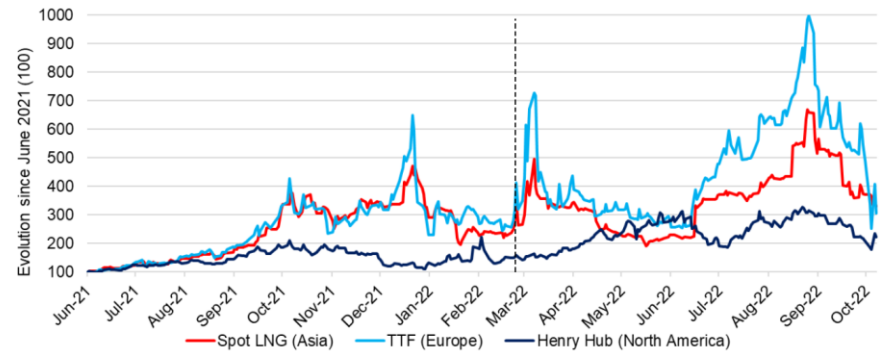
LNG demand per main market (Jan-Aug), 2021-2022



Historical and future electricity prices in selected electricity markets, 2020-2023

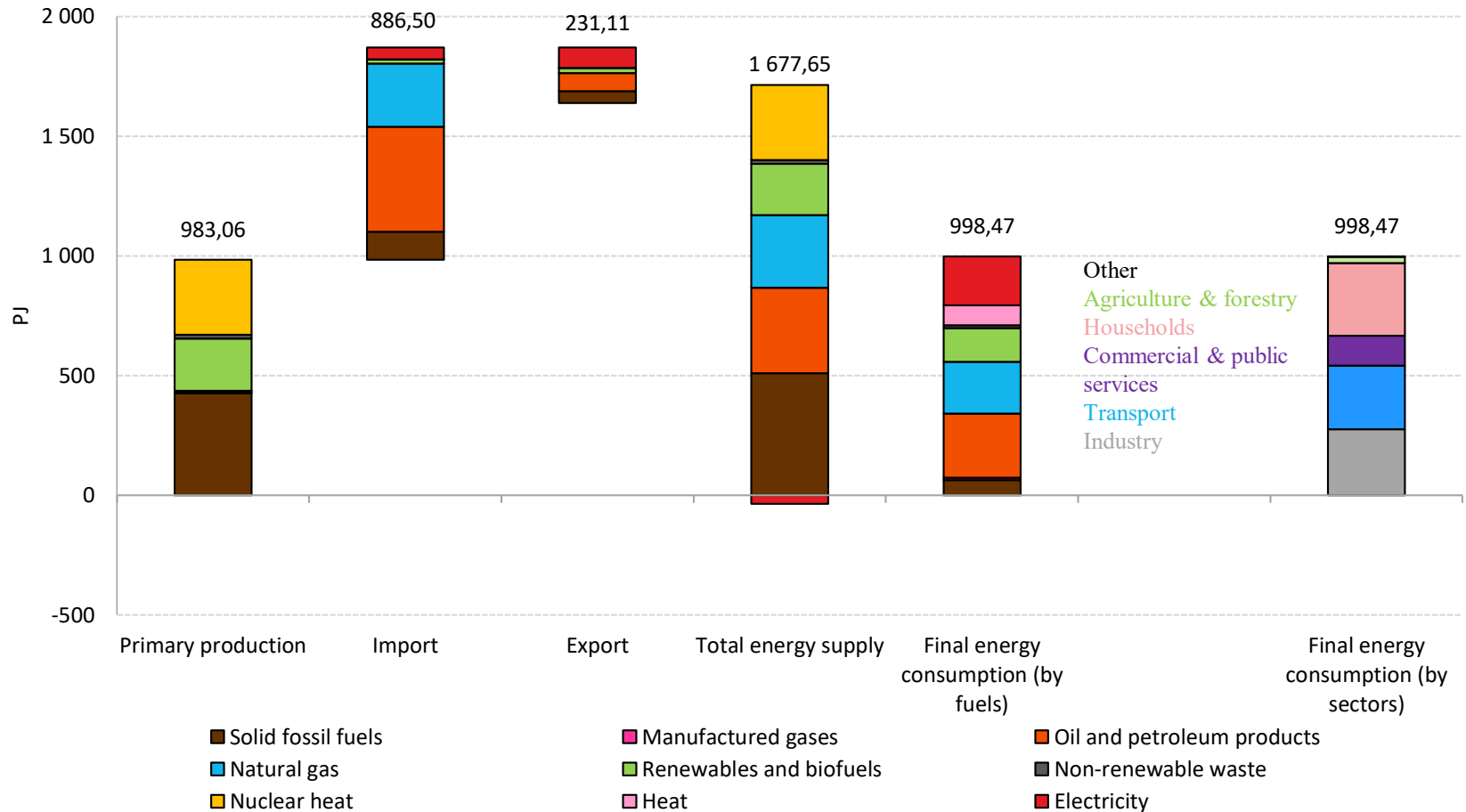


Evolution of key regional natural gas prices since mid-2021



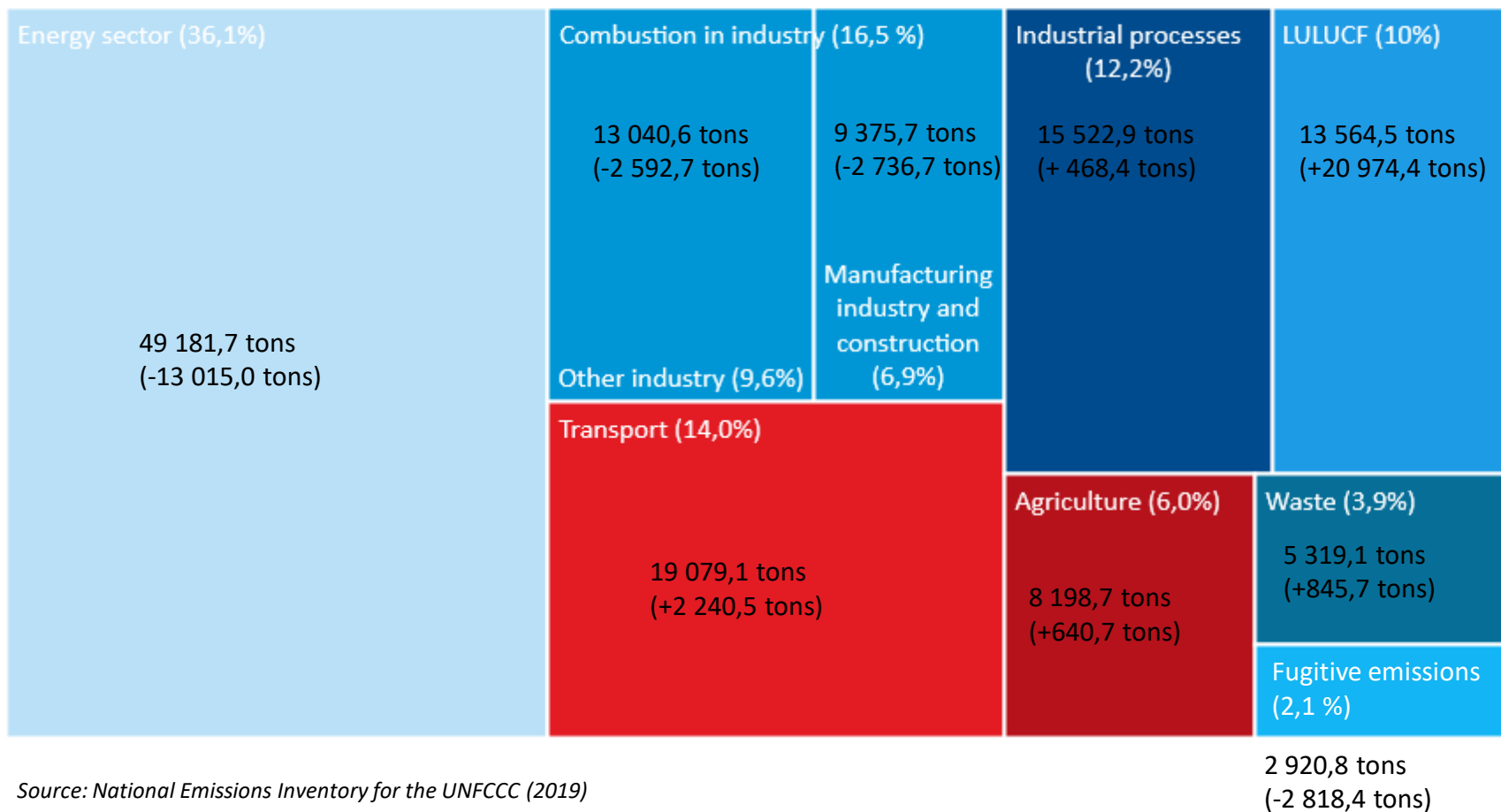
Source: IEA

# Energy mix of CZ (2020)



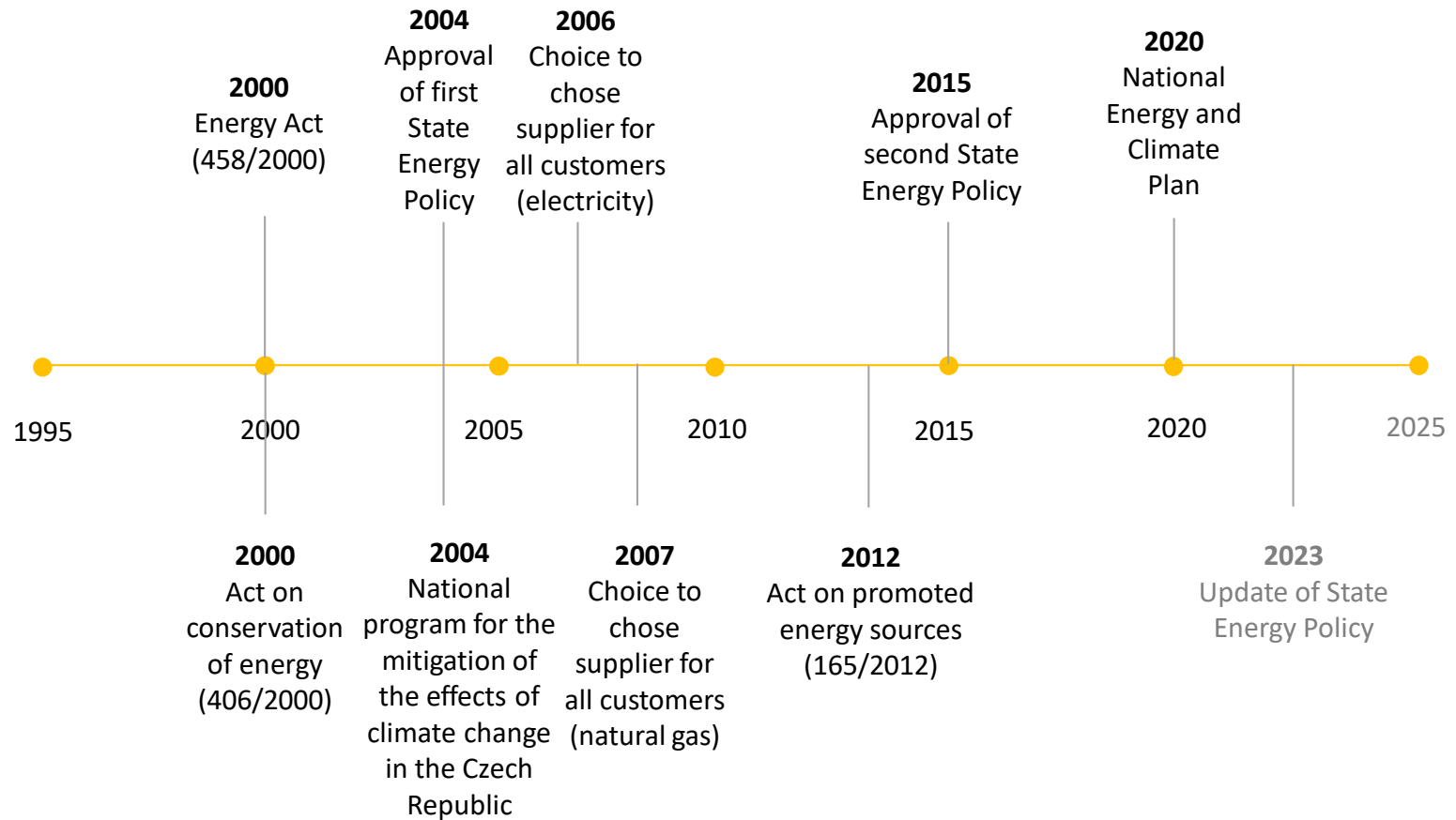
# Distribution and trends in GHG emissions

**Distribution of total greenhouse gas emissions in 2019 (136.2 million tons of CO2 eq.) compared to 2010 (132.2 million tons of CO2 eq.)**



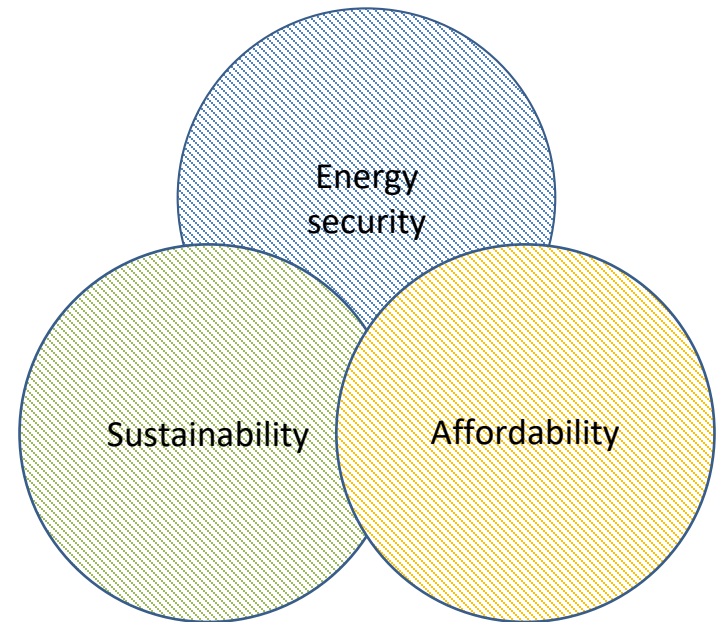
Source: National Emissions Inventory for the UNFCCC (2019)

# Milestones of Energy policy of CZ



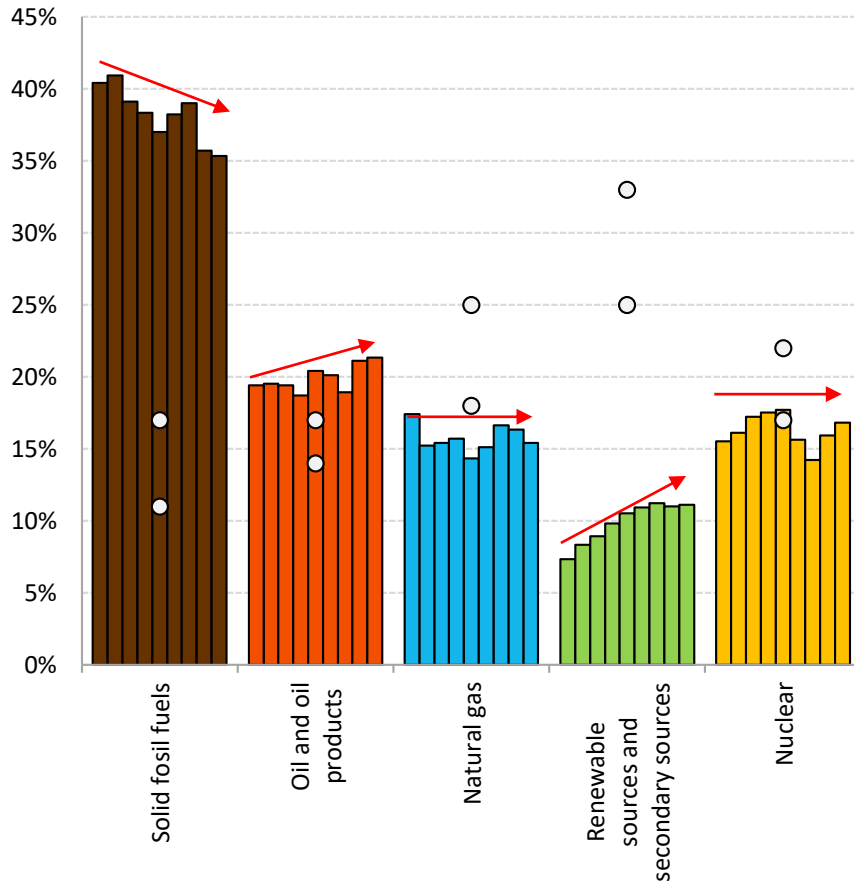
# Energy policy of CZ

- ➔ **Energy trilemma** (environmental sustainability, affordability and security) at the heart of energy policy.
- ➔ **Energy and climate policy** perceived as one area.
- ➔ **Stronger regulation on EU level =>** gradual shift from harmonization and creation of common market to direct influence of energy mix.
- ➔ More bipolar/multipolar world, where **countries strive for dominance** rather than cooperation.

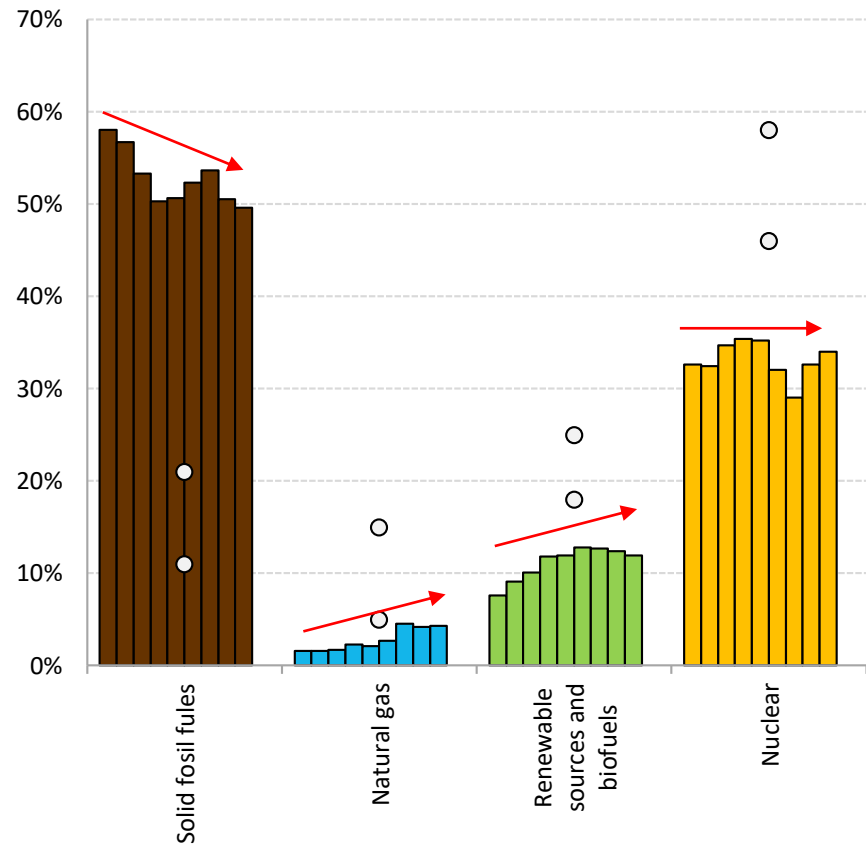


# Strategic corridors of State Energy Policy

Relative corridors for primary energy sources  
(dots marks relative min and max for 2040)

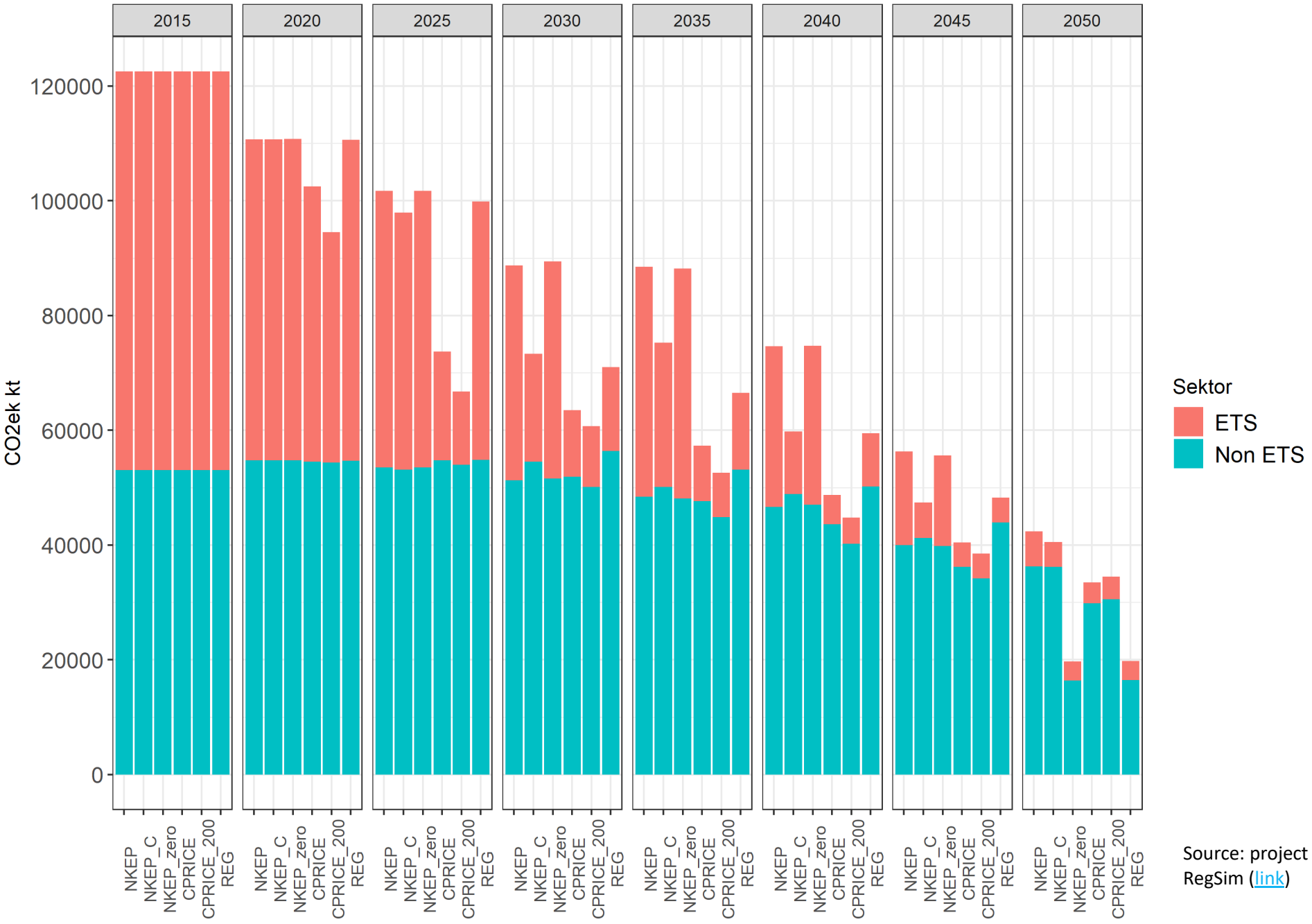


Relative corridors for electricity production  
(dots marks relative min and max for 2040)



Source: State Energy Policy (2015)

**GHG emissions in EU ETS and non EU ETS  
(without CH4, NO2 and LULUCF sector)**

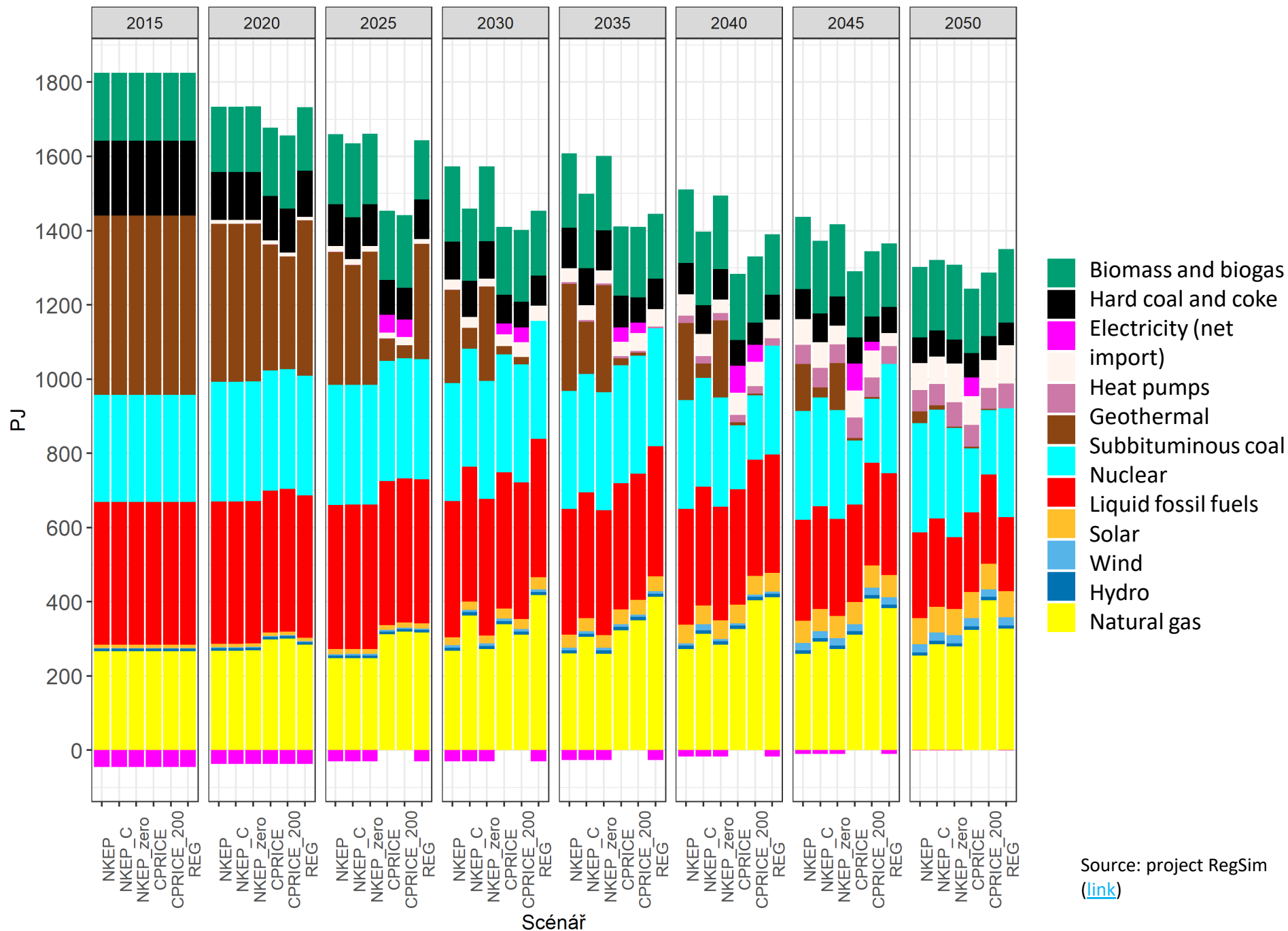


Sektor  
■ ETS  
■ Non ETS

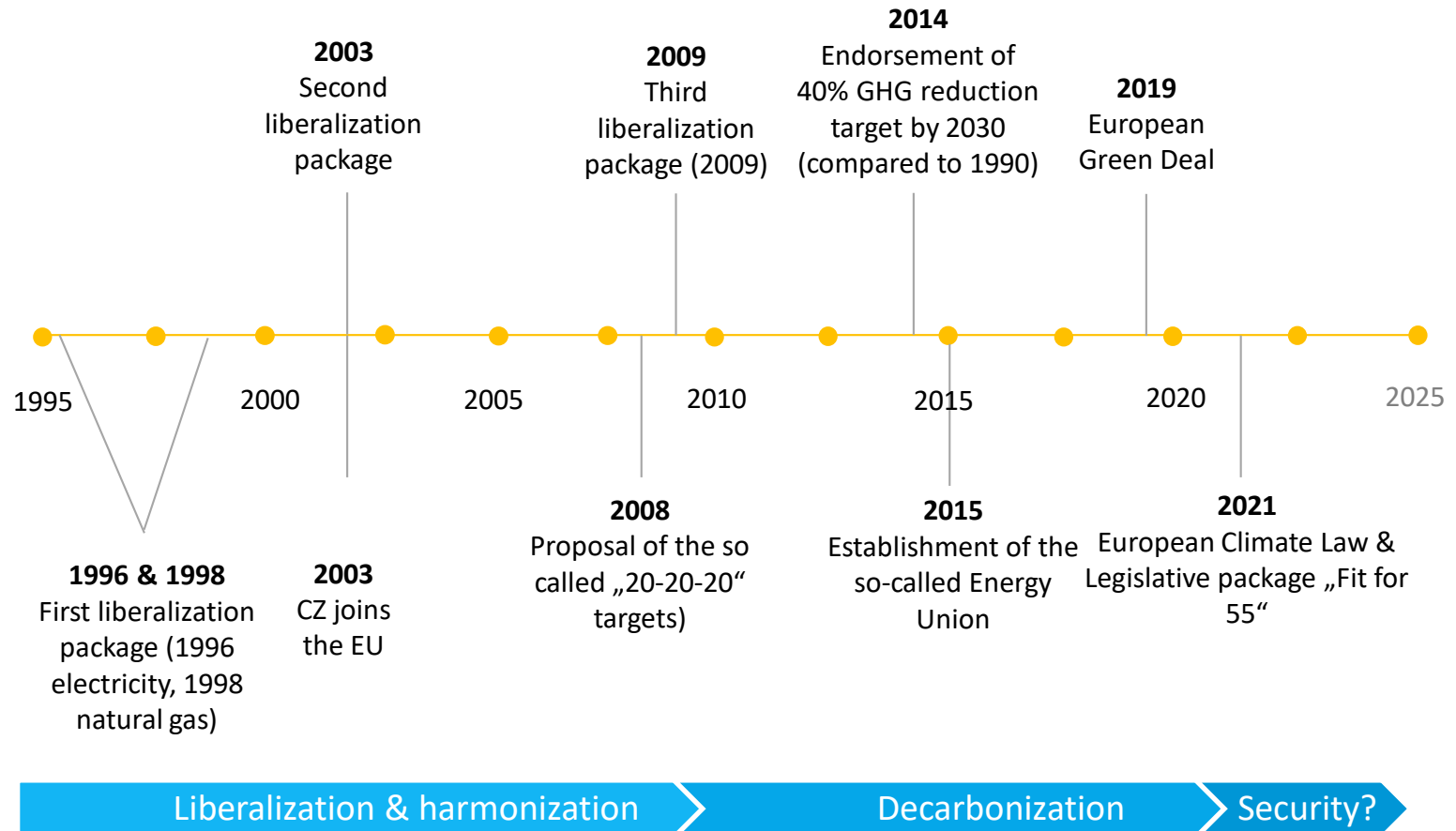
Source: project RegSim ([link](#))



# PRIMARY ENERGY SOURCES

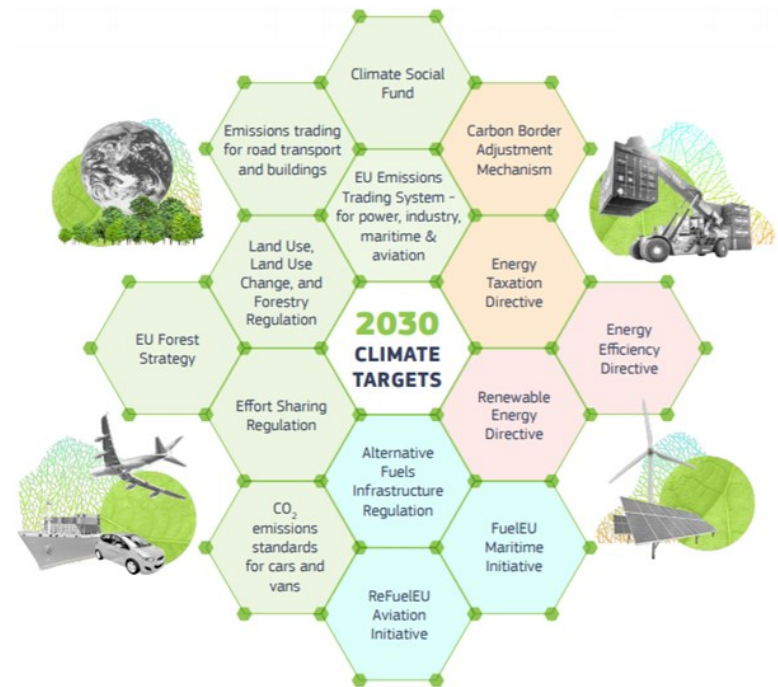


# Energy and climate policy of EU



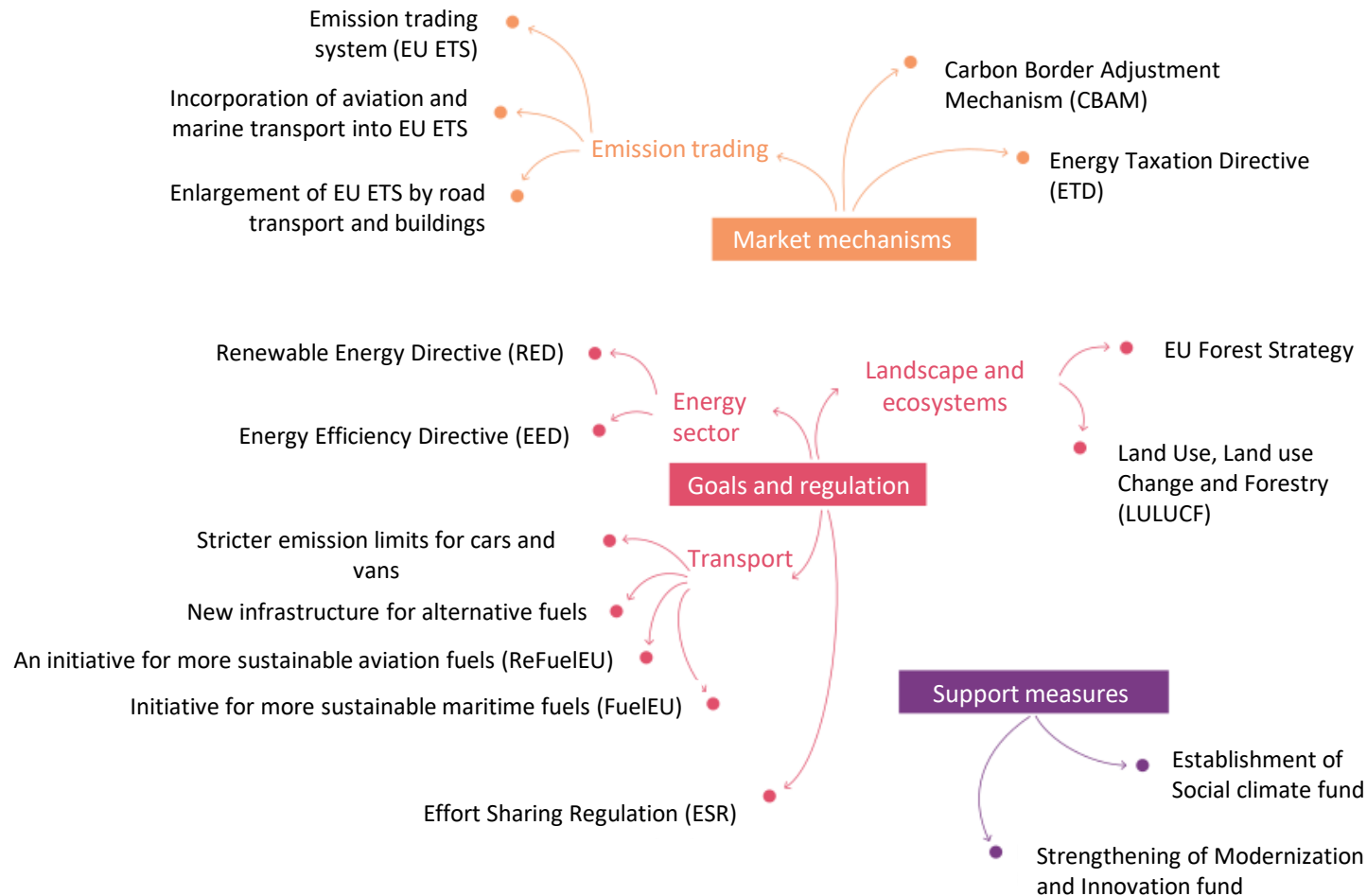
# Energy and climate policy of EU

- ➔ **2014:** Endorsement of 40% GHG reduction target by 2030 (compared to 1990)
- ➔ **2015:** Establishment of the so-called Energy Union (GHG, EE, IEM, SOS, R&D)
- ➔ **2016:** Legislative package „Clean Energy for all Europeans“
- ➔ **2018:** „A clean planet for everyone“
- ➔ **2019:** European Green Deal,
- ➔ **2020:** Approval to increase target to 55% GHG reduction by 2030
- ➔ **2021:** European Climate Law (climate neutrality by 2050) Legislative package „Fit for 55“



# Energy and climate policy of EU

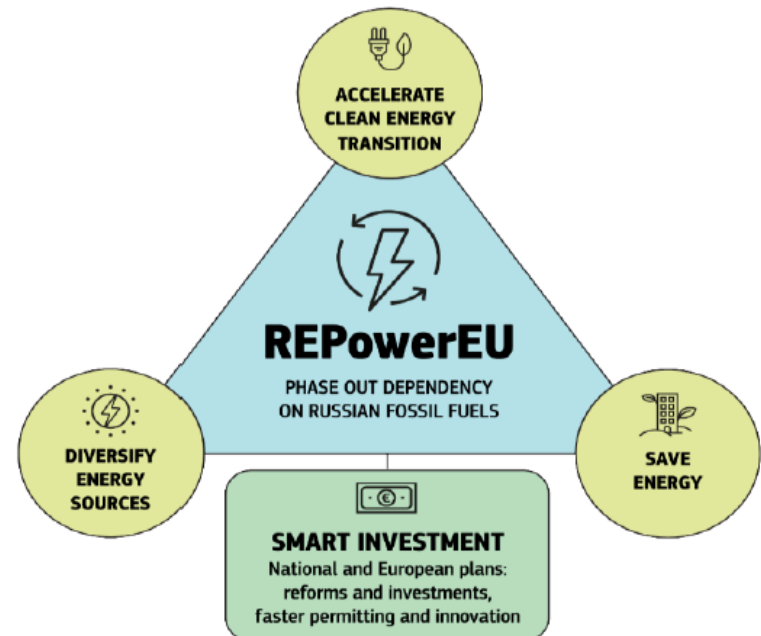
Fit for 55 framework



# Energy and climate policy of EU

**2022:**

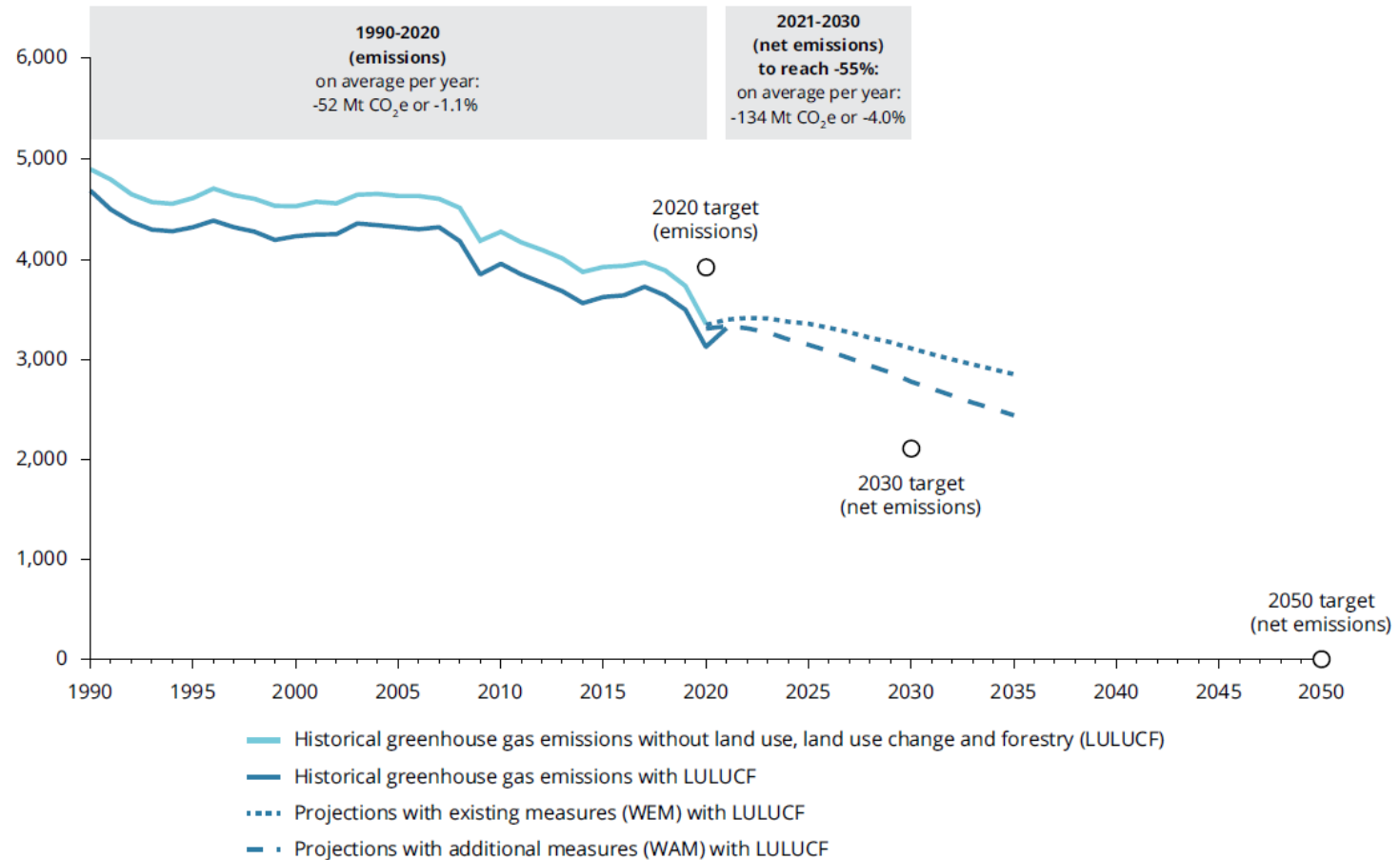
- ➔ **March:** REPower EU communication
- ➔ **April:** Revision of Regulation of SoS of natural gas;
- ➔ **August:** Regulation on coordinated demand-reduction measures for gas
- ➔ **September:** Regulation on an emergency intervention to address high energy prices
- ➔ **October:** Regulation on enhancing solidarity



# Energy and climate policy of EU

## Historical trends and future projections for greenhouse gas emissions

Million tonnes of CO<sub>2</sub> equivalent (Mt CO<sub>2</sub>e)

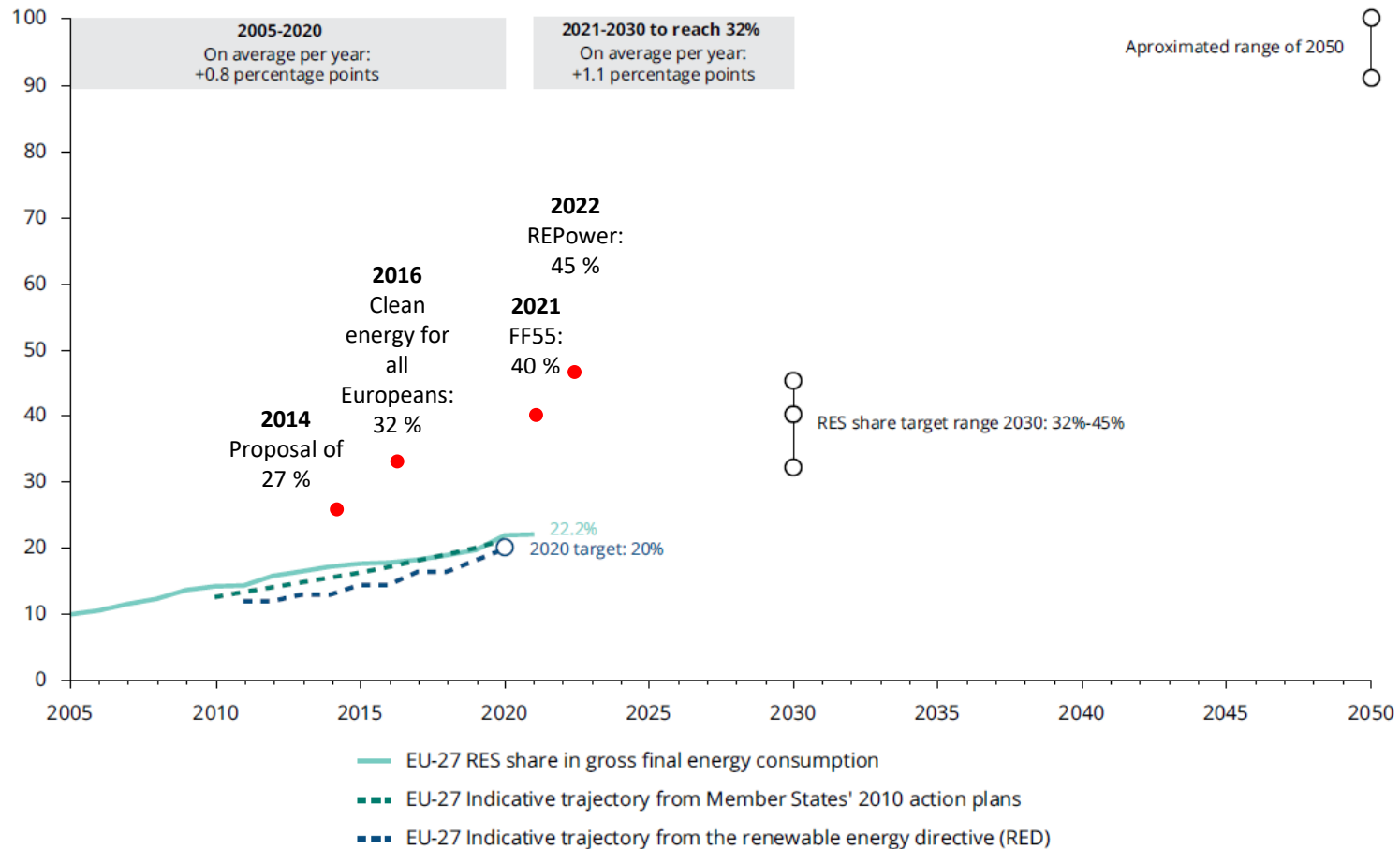


Source: Trends and projections in Europe, EEA ([link](#))

# Energy and climate policy of EU

## Historical trends and outlook for renewable energy shares

Percentage of renewable energy sources (RES) share in gross final energy consumption

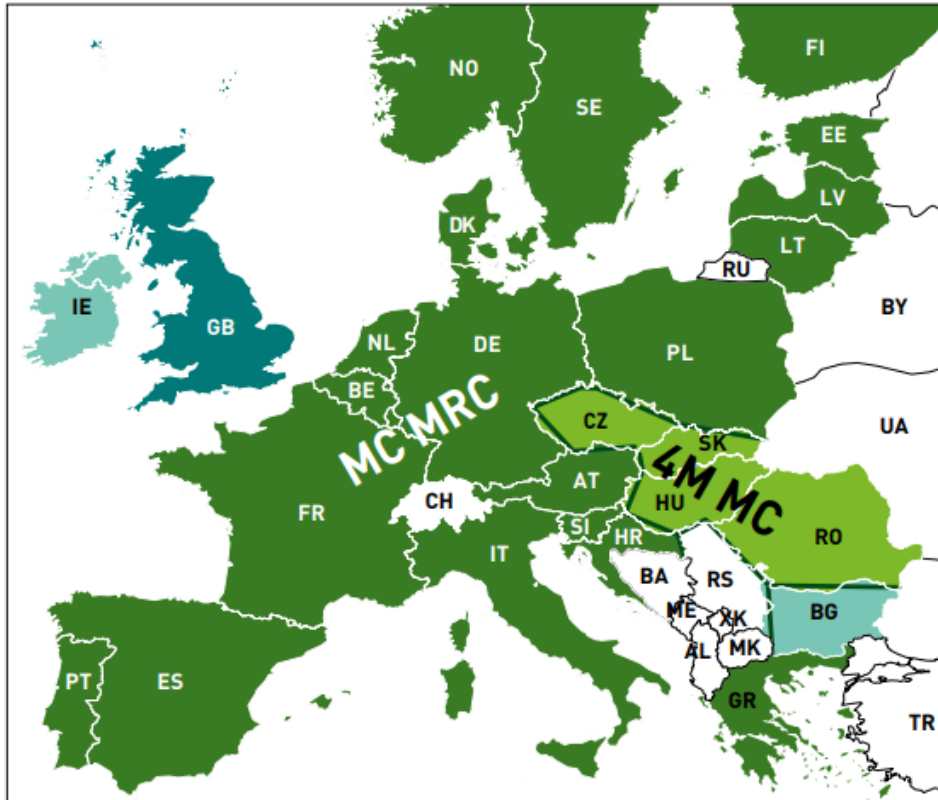


Source: Trends and projections in Europe, EEA ([link](#))

# Market liberalization

## Integrace spotových trhů v Evropě v závěru roku 2020

### Integration of day-ahead spot markets in Europe at the end of 2020



- MC MRC
- explicitní alokace / explicit auction
- 4M MC
- společné vypořádání s MC MRC  
common clearing together with MC MRC
- součásti MC MRC do konce roku 2020  
part of MC MRC until the end of 2020

- 1996** propojení mezinárodního trhu NordPool  
first coupled electricity market NordPool
- 2006** spojení trhů FR, BE a NL na principu Market Coupling  
market coupling of FR, BE and NL based on Market Coupling principle
- 2007** společný trh Španělska a Portugalska – MIBEL  
common market of Spain and Portugal – MIBEL
- 2009** propojení trhů CZ-SK  
coupling of CZ-SK markets
- 2010** spojení trhů CWE NordPool a Pobaltí  
CWE, NordPool and Baltics coupled
- 2012** propojení trhů CZ-SK-HU  
coupling of CZ-SK-HU markets
- 2014** vznik MC MRC a 4M MC  
MC MRC and 4M MC established
- 2015** připojení Itálie do MC MRC – celkem 19 zemí  
Italy joins MC MRC – 19 countries in total
- 2018** připojení Chorvatska do MC MRC  
Croatia joins MC MRC
- 2020** připojení Řecka do MC MRC  
Greece joins MC MRC

Source: OTE ([link](#))



# Main trends framing the energy policy

## Decarbonization

- Low-carbon sources (RES, nuclear energy)
- Decarbonization of fossil fuels (CCS/CCU, „greening of natural gas“ etc.)
- Energy efficiency
- Low-carbon processes/ technologies (mainly dealing with process emission in industry)

## Decentralization

- Decentralized sources (RES, H2, CHP etc.)
- Infrastructure – hardware and software („smart grids“)
- Energy storage (electro-chemical, thermal, kinetic)

## Digitalization

- Smart grids
- Internet of things
- 3D printing
- Secondary aspects such as cyber security

## Democratization

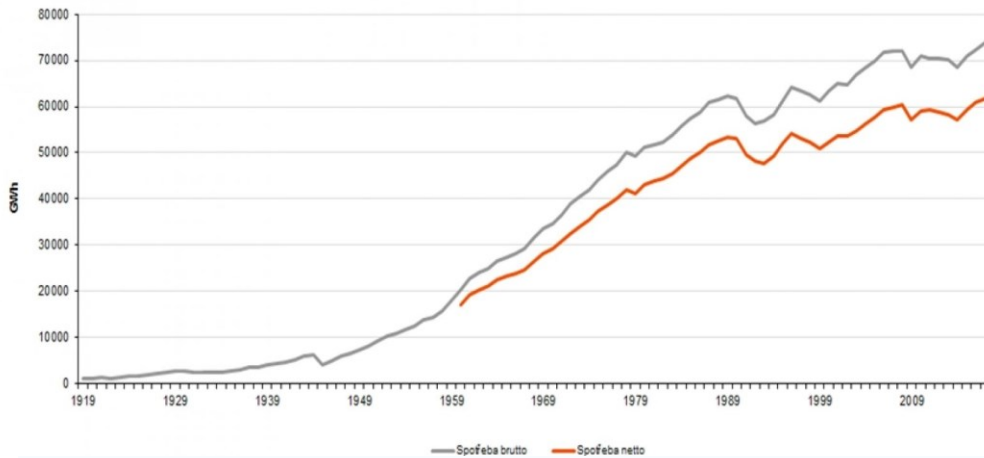
- New actors: Energy communities/communities for RES; aggregators etc.
- Smart metering
- Self consumption
- Smart cities
- Positive energy districts

## Sector coupling

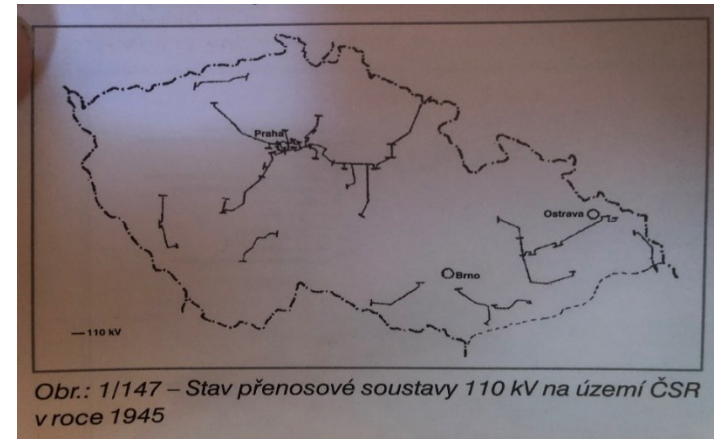
- „Power-to-X“ technologies („x“ = gas, heat, fuel etc.)
- Electrification; use of hydrogen for energy storage etc., „greening“ of natural gas
- Energy storage (electro-chemical, thermal, kinetic)

# Electrification

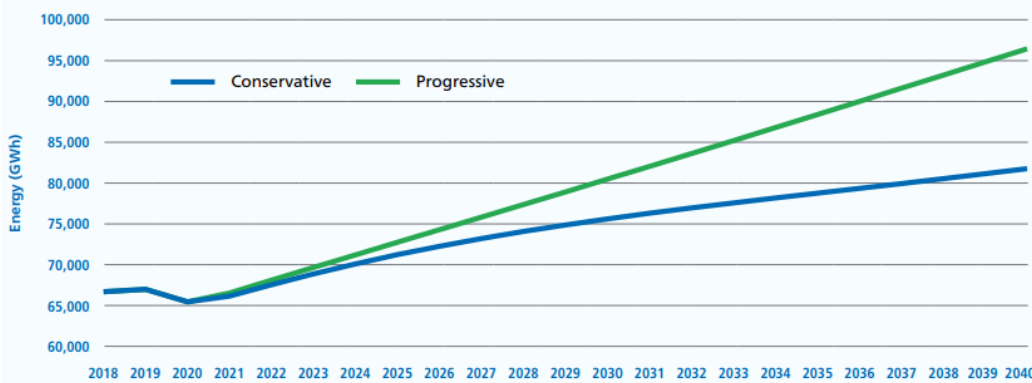
Electricity consumption (1919-2017)



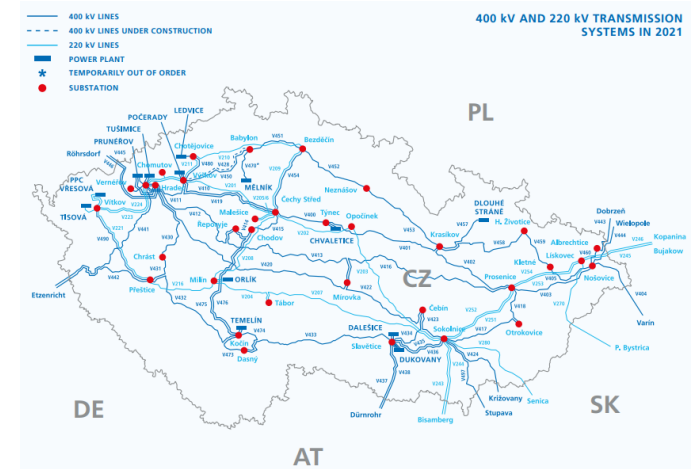
Transmission system of CZ in 1945



Electricity consumption scenarios in CZ



Transmission system of CZ (2021)



Source: MAF CZ ([link](#))

Source: Pocket book, ČEPS ([link](#))

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# Thank you for your attention



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