



COAL PHASE-OUT AS A PART OF CEZ GROUP'S CORPORATE STRATEGY

**REKK Regional Conference Online:
COAL PHASE-OUT in the CEE Region**

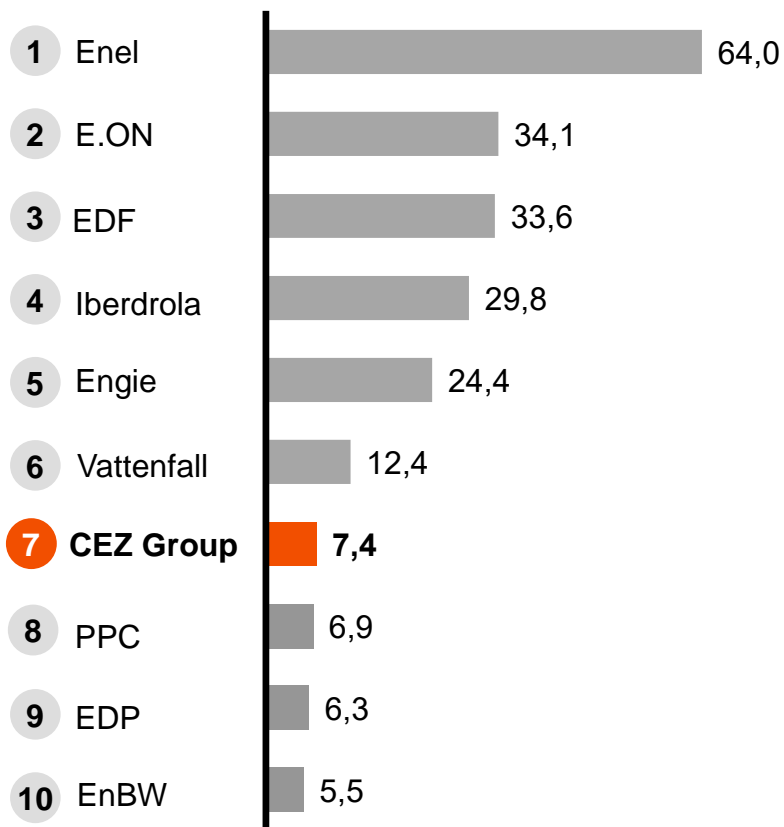
October 7, 2020

CEZ GROUP RANKS AMONG LEADING UTILITY COMPANIES IN EUROPE



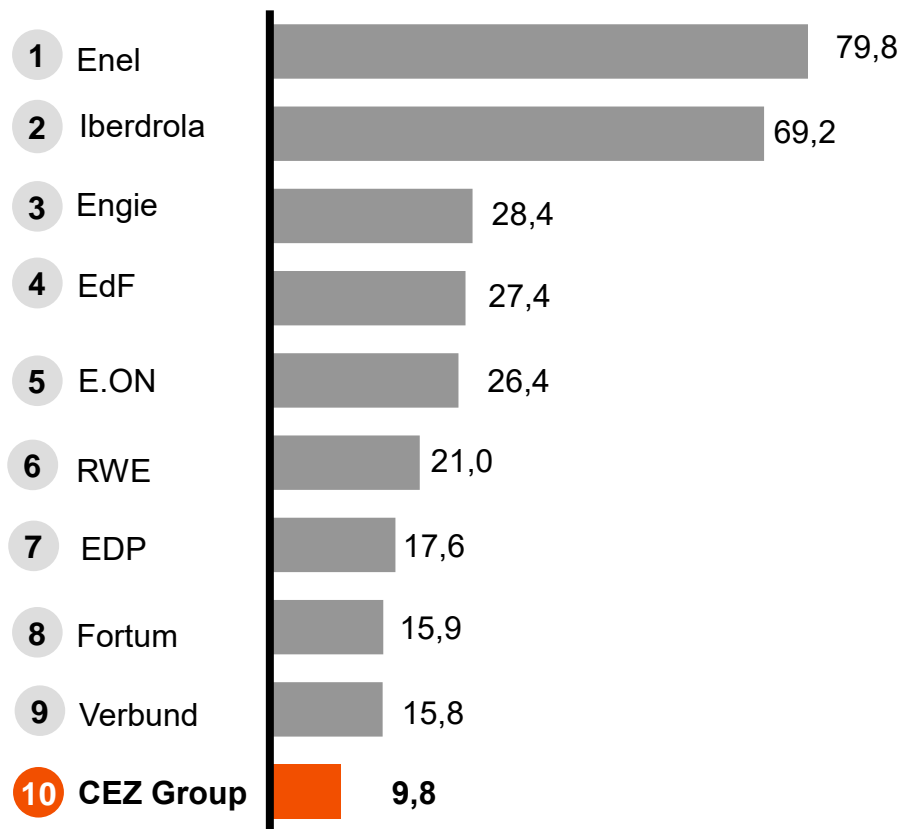
Top 10 European power utilities

Number of customers in 2019, in millions

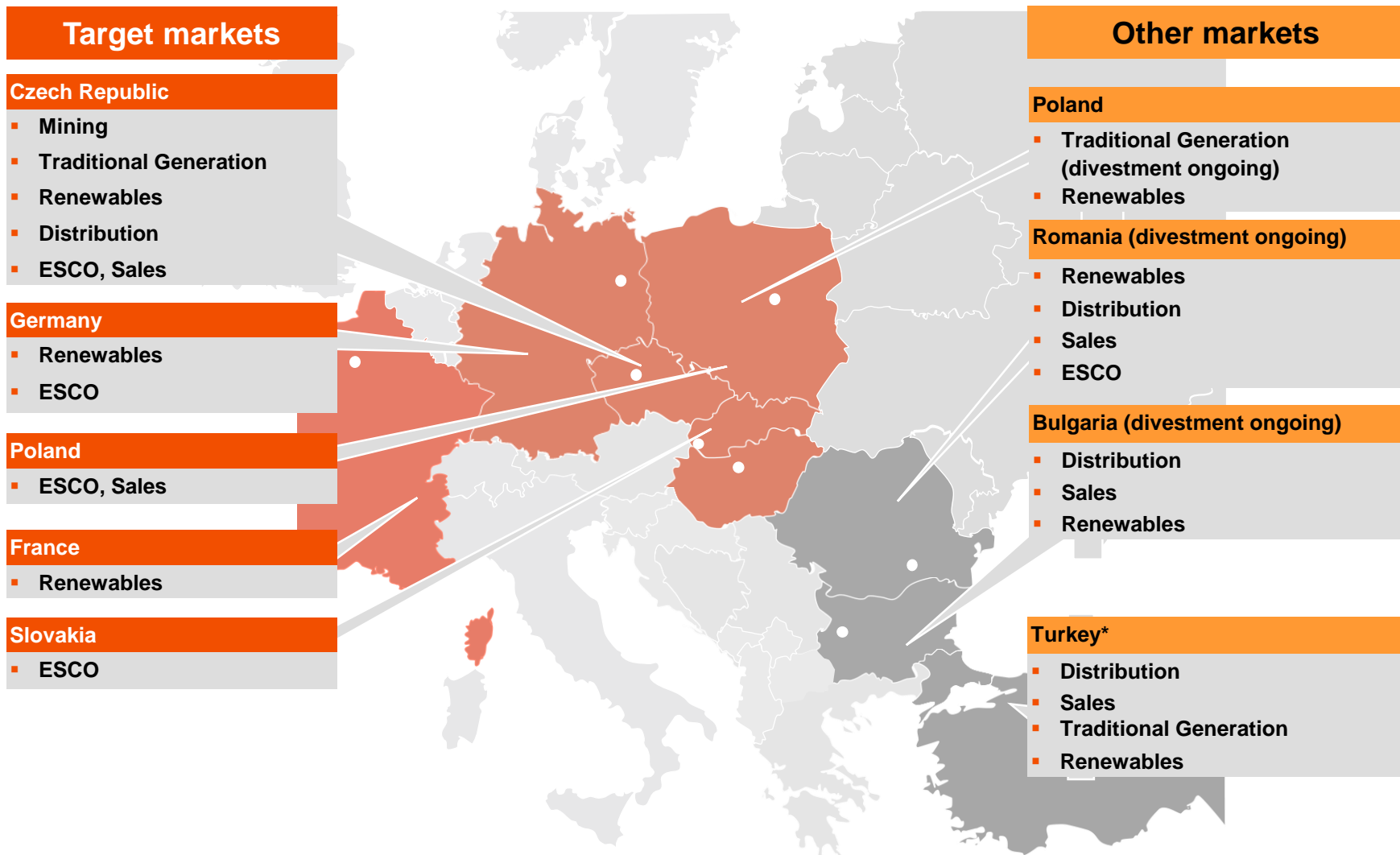


Top 10 European power utilities

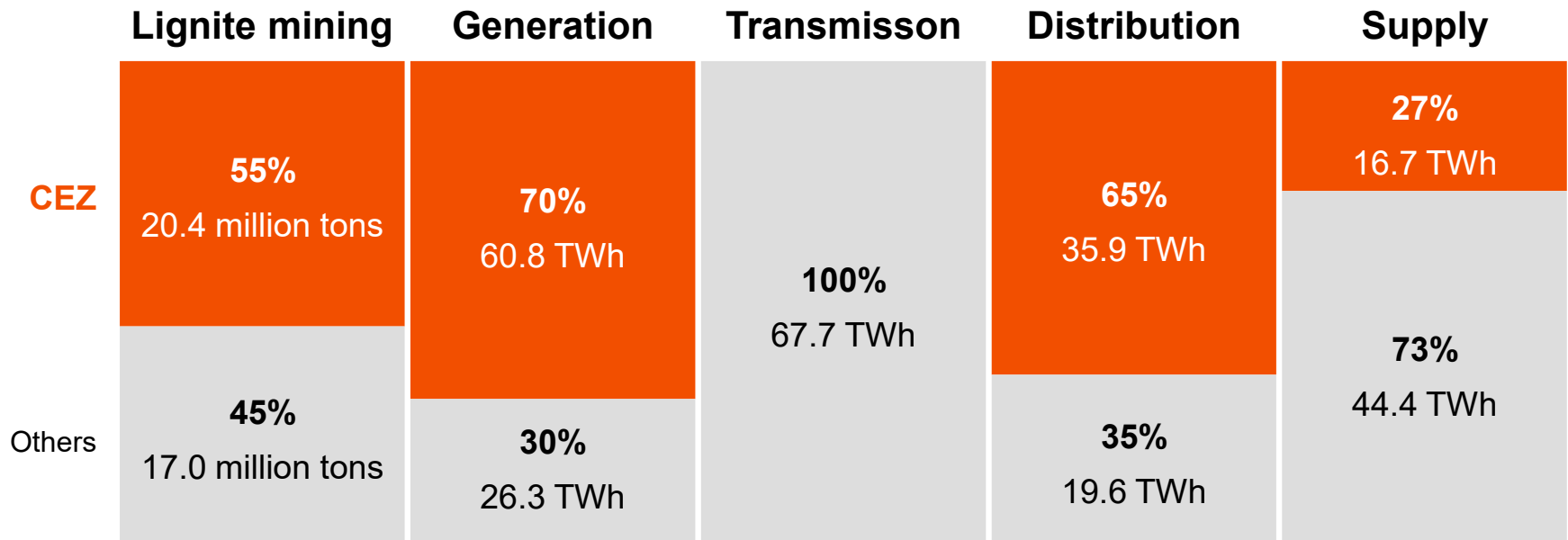
Market capitalization in EUR bn, as of Aug 17, 2020



CEZ GROUP IS AN INTERNATIONAL UTILITY WITH A STRONG POSITION IN ITS DOMESTIC MARKET AND GROWING PRESENCE IN WESTERN EUROPE



CZECH REPUBLIC IS THE MOST IMPORTANT MARKET FOR CEZ GROUP, IT IS VERTICALLY INTEGRATED THERE



- CEZ fully owns the largest Czech mining company (SD) covering 72% of CEZ's Lignite needs
- Remaining 3 coal mining companies are privately owned

- Other competitors are individual IPPs

- The Czech transmission grid is owned and operated by CEPS, 100% owned by the Czech state

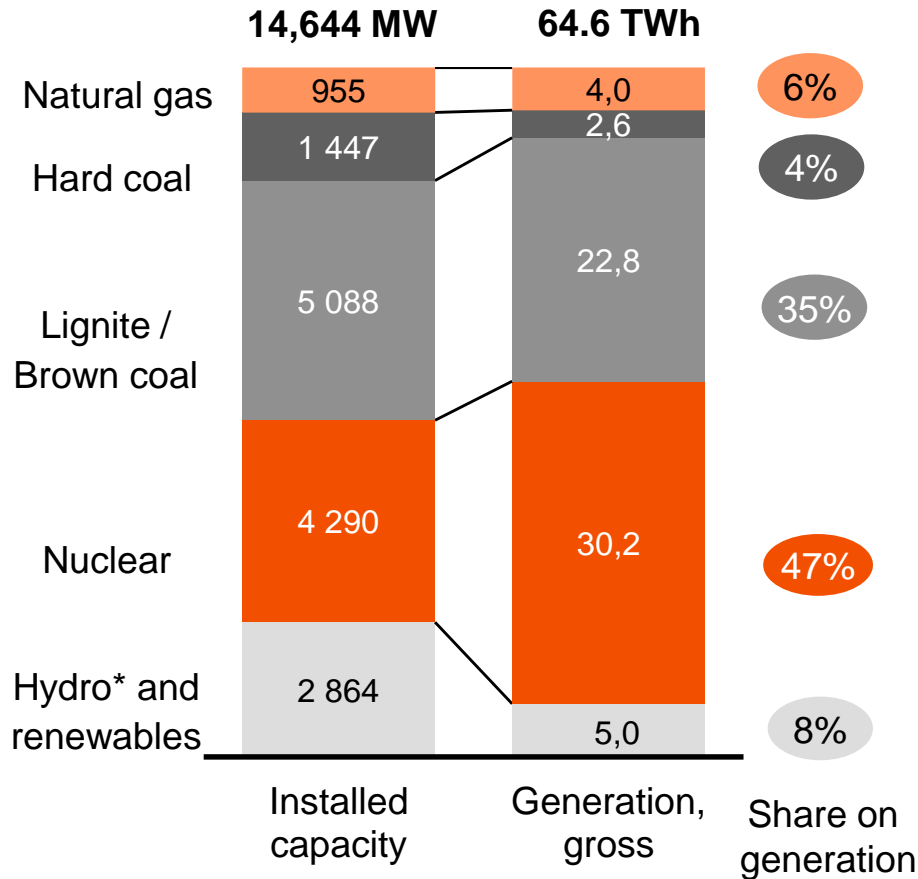


- Other competitors – E.ON, PRE (41% held by EnBW), Bohemia Energy, Innogy, Centropol Energy

CEZ GROUP OPERATES LOW COST ELECTRICITY GENERATION FLEET



Installed capacity and generation (2019)



- **Coal power plants are using mostly lignite from CEZ's own mine** (72% of lignite needs sourced internally, remaining volume through long-term supply contracts)
- **Nuclear plants have very low operational costs**



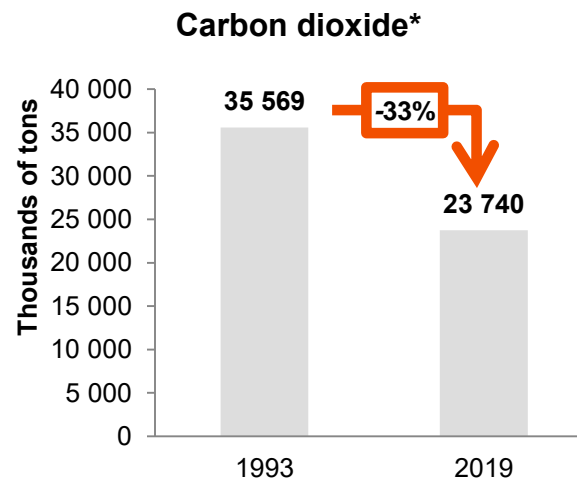
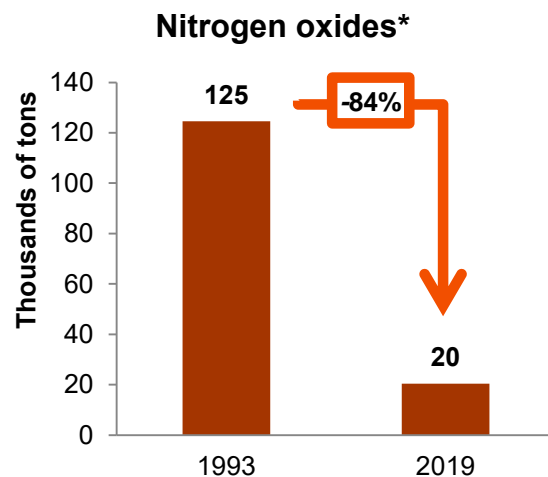
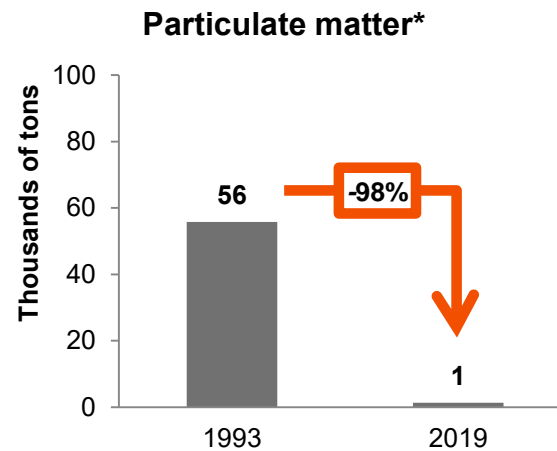
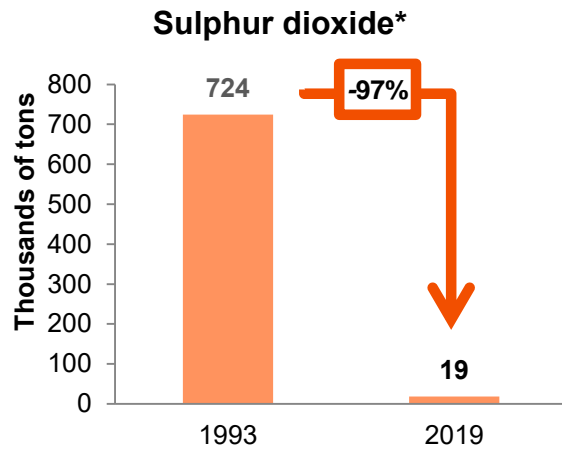
CEZ has a long-term competitive advantage of low and relatively stable generation costs

CEZ GROUP NEEDS TO ADAPT TO MORE AND MORE AMBITIOUS EUROPEAN CLIMATE TARGETS



	2020	2030*	The European Green Deal <ul style="list-style-type: none"> By 2050, Europe aims to become the world's first climate-neutral continent As a result, pressure on decarbonization will grow further Also, there is a strong long-term incentive for CO2 price growth
Reduction of greenhouse gas emissions from 1990 levels	20% <ul style="list-style-type: none"> Binding EU-wide target Target already accomplished thanks to the economic crisis, rising RES and inexpensive gas 	At least 40% <ul style="list-style-type: none"> Binding EU-wide target Can be reached as a side effect of fulfilling other two targets Pressure to increase to 50-55% 	
Share of renewable energy sources (RES) in total final energy consumption**	20% <ul style="list-style-type: none"> Binding on national level in the form of specific national targets Great chance to meet the target on EU level 	At least 32 % <ul style="list-style-type: none"> Binding EU-wide target, national targets will be specified RES electricity in the EU should grow to 55% 	
Energy savings compared to business-as-usual predictions from 2007	20% <ul style="list-style-type: none"> Indicative on national level Mandatory energy-saving measures in final consumption Until recently, little attention from the EC 	At least 32,5 % <ul style="list-style-type: none"> Indicative EU-wide target Binding annual savings of 0.8% at national level 	

CEZ GROUP SIGNIFICANTLY REDUCED EMISSIONS FROM ITS COAL FLEET



- During 1990's CZK 111 bn has been invested into complex, modernization of power stations, desulphurization, denitrification and efficiency upgrades. 1,965 MW of old units have been decommissioned
- In 2000-02 nuclear power plant Temelin was commissioned and contributed to reduction of coal output
- 2010's comprehensive renewal of Tušimice and Prunéřov TPP's and new supercritical unit at Ledvice. Investment of more than CZK100 bn has led to further increase in efficiency of the power generation and emission reductions

50% REDUCTION IN INSTALLED COAL CAPACITY ALREADY BY 2025 AND FULL COAL DECOMMISSIONING BY 2050



Coal fired power plants will be gradually closed, full exit by 2050

- Coal fired power plants represented 45% of capacity and 39% of generation volume in 2019. Their revenues are less than 20% of total.
- Coal fired capacity will decrease by half from 7.8 GW in 2016 to 3.9 GW by 2025 and further to 2.5 GW in 2035
- The goal for 2030 is to reduce CO₂ emissions by 30% compared to 2018 and reduce the emission intensity to at least 300 g/kWh by a combination of closure of selected coal plants and development of renewables.
- CEZ made commitment for carbon neutrality by 2050*

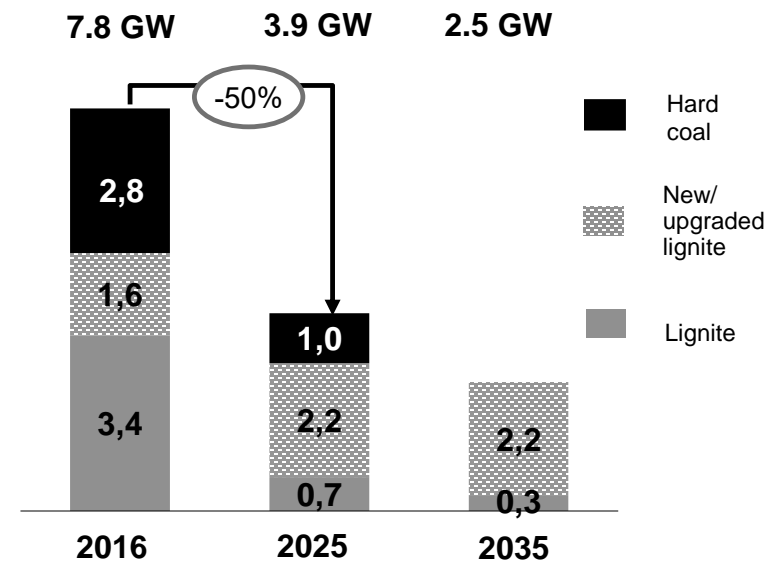
CEZ is expanding its footprint in renewables, not planning any new coal fired power plants

- CEZ's strategy focuses on power generation capacity growth in renewables expanding its currently running 1,700 MW renewable generation capacity (half of which built in the last decade)

Coal extracted is mainly used in own power plants

- CEZ Group produced 20.4 mil tones of coal, out of which only 26% is sold externally
- Share of coal mining and related activities (except power generation) on CEZ group's revenues is 2% only
- Volume of extracted coal is expected to decline reflecting the closures of CEZ coal capacities.

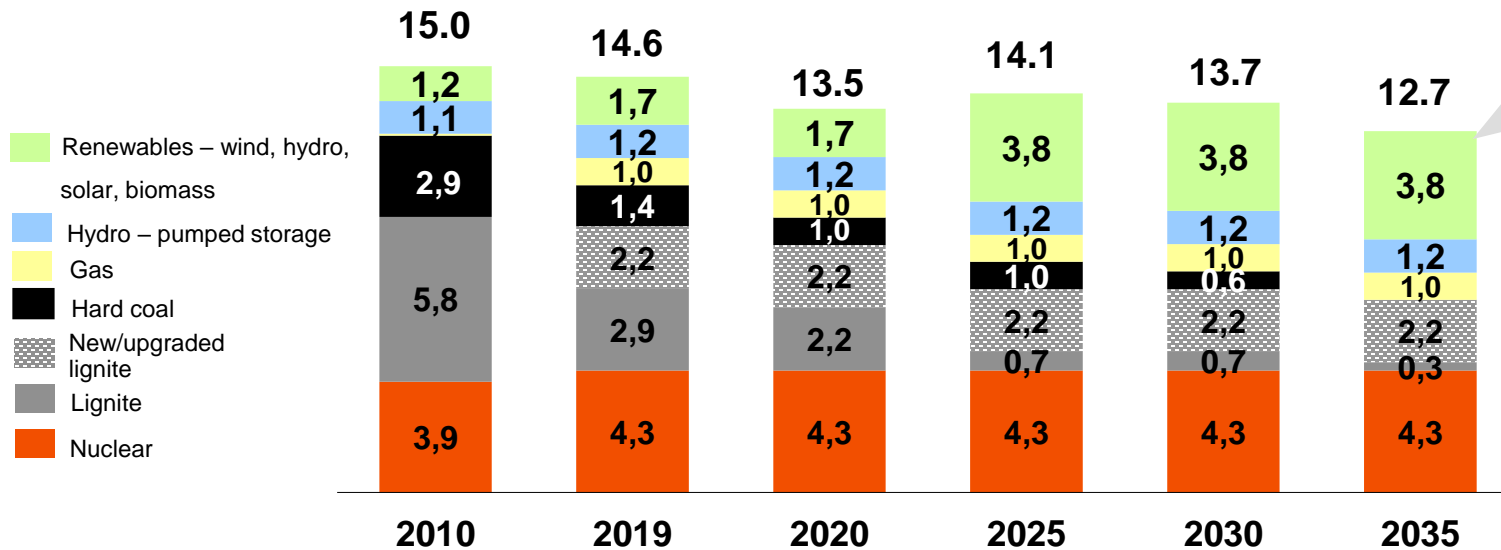
Expected development of installed capacity in coal (GW)



CEZ GROUP'S CO2 EMISSIONS INTENSITY TO DECLINE AS A RESULT OF CLOSURES OF OLD LOW-PROFIT COAL UNITS AND GROWTH OF RENEWABLES



Expected development of installed capacity (GW)*



Increase in renewables is dependent on regulatory developments

Emission intensity**
(t CO₂/MWh generated)



- CO2 emission intensity to decrease by another 22% from 2018 levels.
- Upgraded portfolio contains highly efficient Tušimice (39%), Prunéřov (40%) and Ledvice (42.5%) power plants.
- Closures of old lignite and hard coal units not supplied by our own coal, i.e. units with low profit will result in decrease of the total installed capacity.
- Capacity of nuclear increased by 0.5 GW in 2009-13 enabling additional 3.8 TWh of carbon free production.

FASTER DECARBONIZATION COULD BE REALIZED FOR INSTANCE THROUGH A NEW CCGT PLANTS REPLACING EXISTING COAL-FIRED POWER PLANTS



Possible locations for the development of new CCGT plants within CEZ GROUP's locations

- CEZ GROUP's locations which might be considered for possible construction of new CCGT plants are listed below:

Location	Estimated installed capacity (MWe)	Comment
Prunéřov	800	Substantial heat supply
Tušimice	2 x 850	Heat supply
Mělník	800	Primarily heat supply
Počerady	800	No heat supply

Possible development in the Počerady location even after the sale of coal-fired Počerady Power Plant

- According to the above, **the possibility of constructing a new gas-fired power plant in Počerady remains:**
 - **Sufficient capacity of the existing gas connection owned by ČEZ**
 - **Electricity connection (reservation of capacity)** is associated with a cost of 0.5 m CZK/MW (i.e. CZK 400 m for 800 MW),
 - The connection is not an entitlement by default, ČEPS shall assess the application and either approve it or determine the conditions under which the source can be connected.
 - The capacity of the connection should be sufficient, as it has recently been doubled
- There will be **sufficient space for a new source**, even after the sale of the lignite power plant and its related lands, including the land for construction of a new coal plant by Vršanská uhelná.

COAL PHASE-OUT IN THE CZECH REPUBLIC IS NOT ONLY ABOUT ELECTRICITY, BUT ALSO ABOUT HEAT...



INITIAL SITUATION AND CEZ GROUP'S POSITION IN THE CZECH DISTRICT HEATING MARKET

- **Heat consumption** for heating, preparation of hot water and technological purposes in Czechia **ranges from 450 to 500 PJ/year (or 125 to 139 TWh/year) → roughly half of total Czech final energy consumption**
- Approximately **one-third** of this heat is produced in **district heating systems (DHS)**, out of which around **80 PJ/year (or 22 TWh/year) is generated from coal (mostly lignite), mostly in CHP plants**
- **CEZ GROUP is one of the largest heat generators (mostly in lignite-fired CHP plants) with approx. 20% share in total heat supply to Czech DHS**

POSSIBILITIES OF COAL PHASE-OUT IN CZECH DISTRICT HEATING SYSTEMS

- **Local biomass (mostly wood chips) and municipal waste could replace up to 50% of heat generated from coal**, the rest needs to be replaced by **natural gas-fired CHP** plants and boilers
- **Natural gas, as a transition fuel, might be replaced by green gas in the future** and complemented with more extensive use of biomass, geothermal energy or nuclear energy in combination with electrification of the heat sector

SUMMARY



- CEZ GROUP operates low cost electricity generation fleet
- In order to adapt to more and more ambitious European climate targets and to comply with stricter emission limits, CEZ GROUP has significantly reduced emissions from its coal fleet
- CEZ GROUP aims to reduce installed capacity of its coal-fired power plants by 50% by 2025 (compared to 2016) and fully decommission coal by 2050
- Faster decarbonization can be realized for instance through a new CCGT plants replacing existing coal-fired power plants
- Coal phase-out in the Czech Republic is not only about electricity, but also about heat (CEZ GROUP is one of the largest heat generators (mostly in lignite-fired CHP plants) with approx. 20% share in total heat supply to Czech DHS)

CEZ made a commitment for carbon neutrality by 2050*



Thank you for your attention

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