

Introduction to Czech Energy Sector, Key Actors, and Regional Topics



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EVROPSKÁ UNIE



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



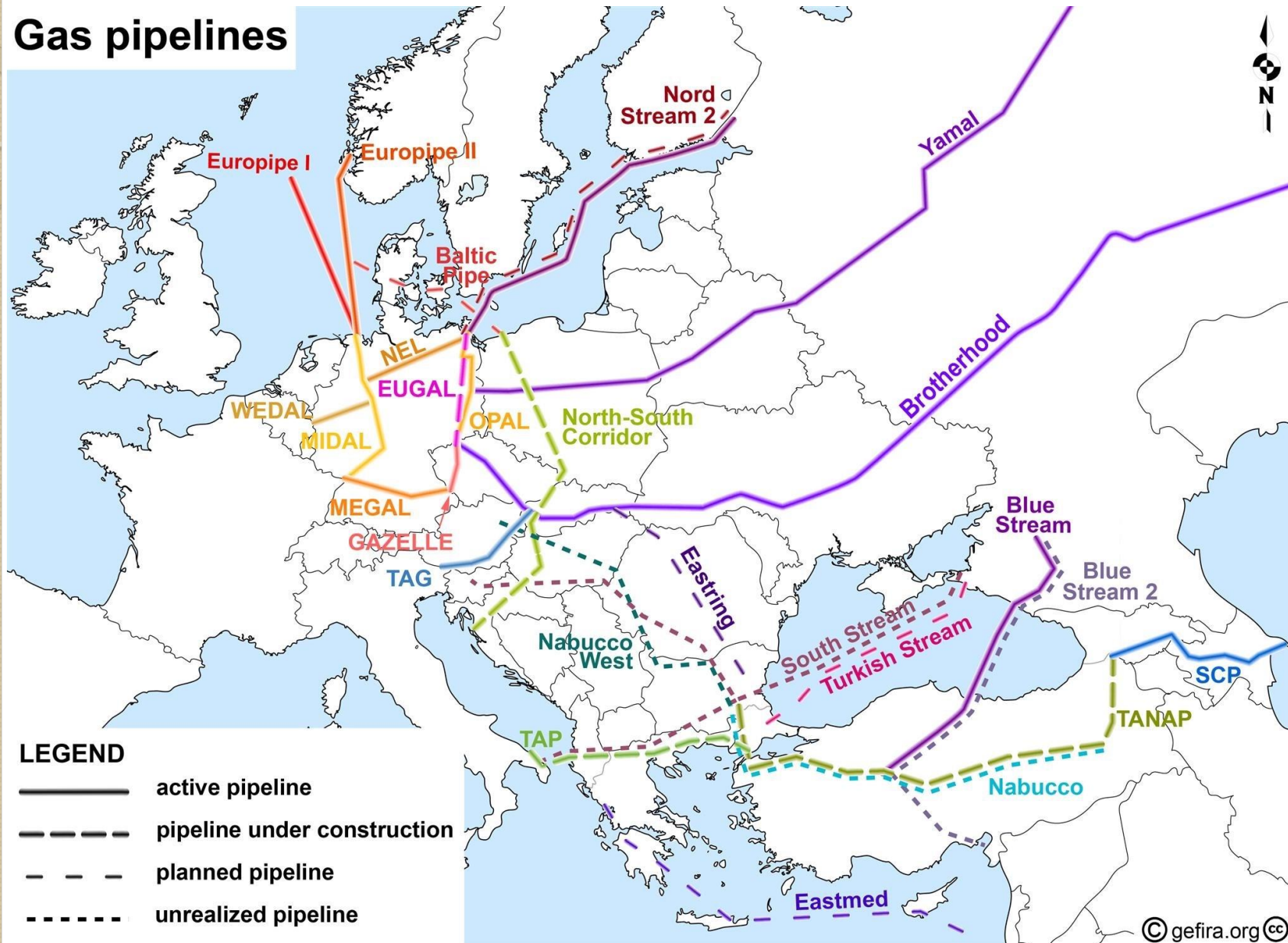
OP Vzdělávání
pro konkurenceschopnost







INVESTICE
DO ROZVOJE
VZDĚLÁVÁNÍ

Regional Energy Relations – Natural Gas

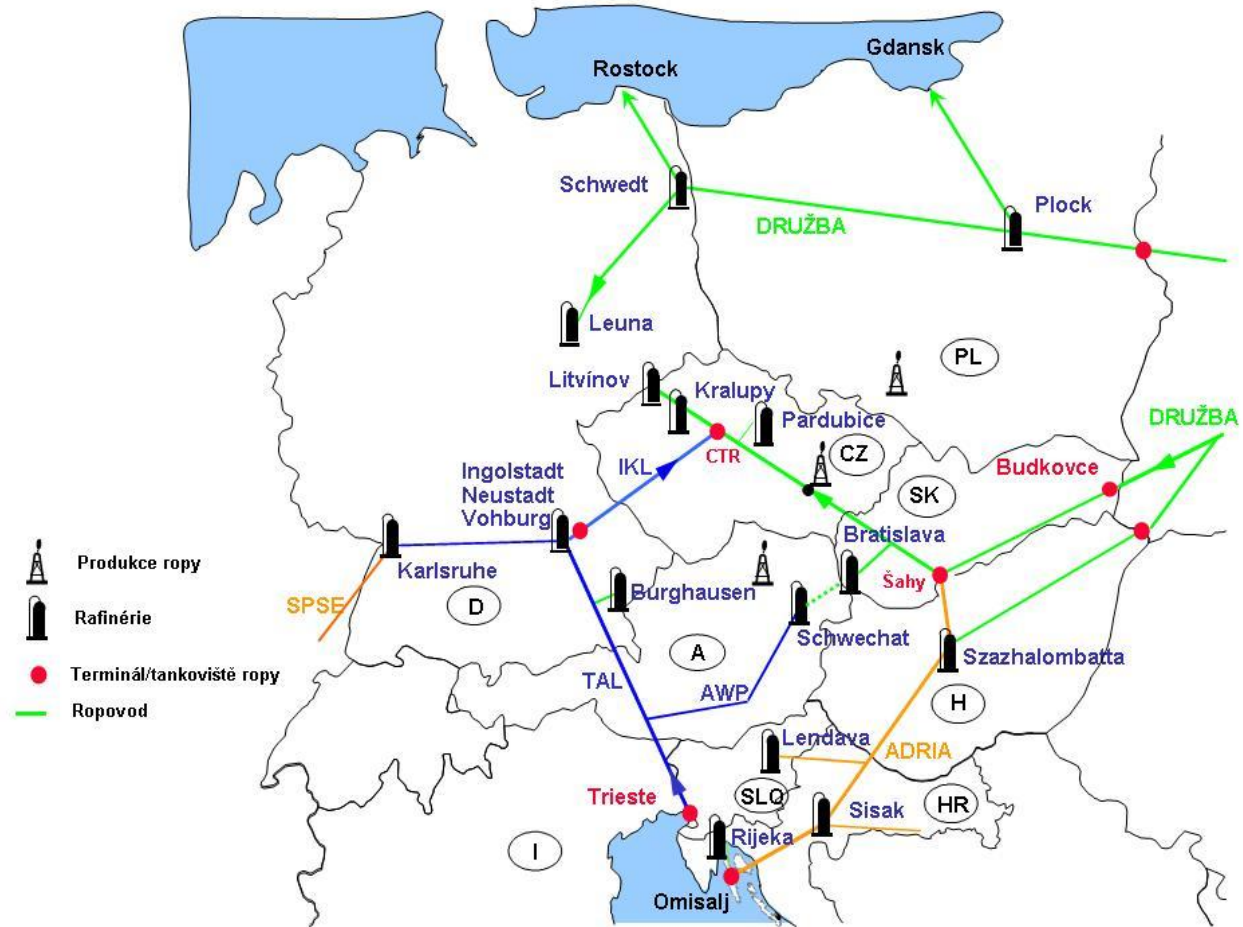
Gas pipelines



LEGEND

-  active pipeline
-  pipeline under construction
-  planned pipeline
-  unrealized pipeline

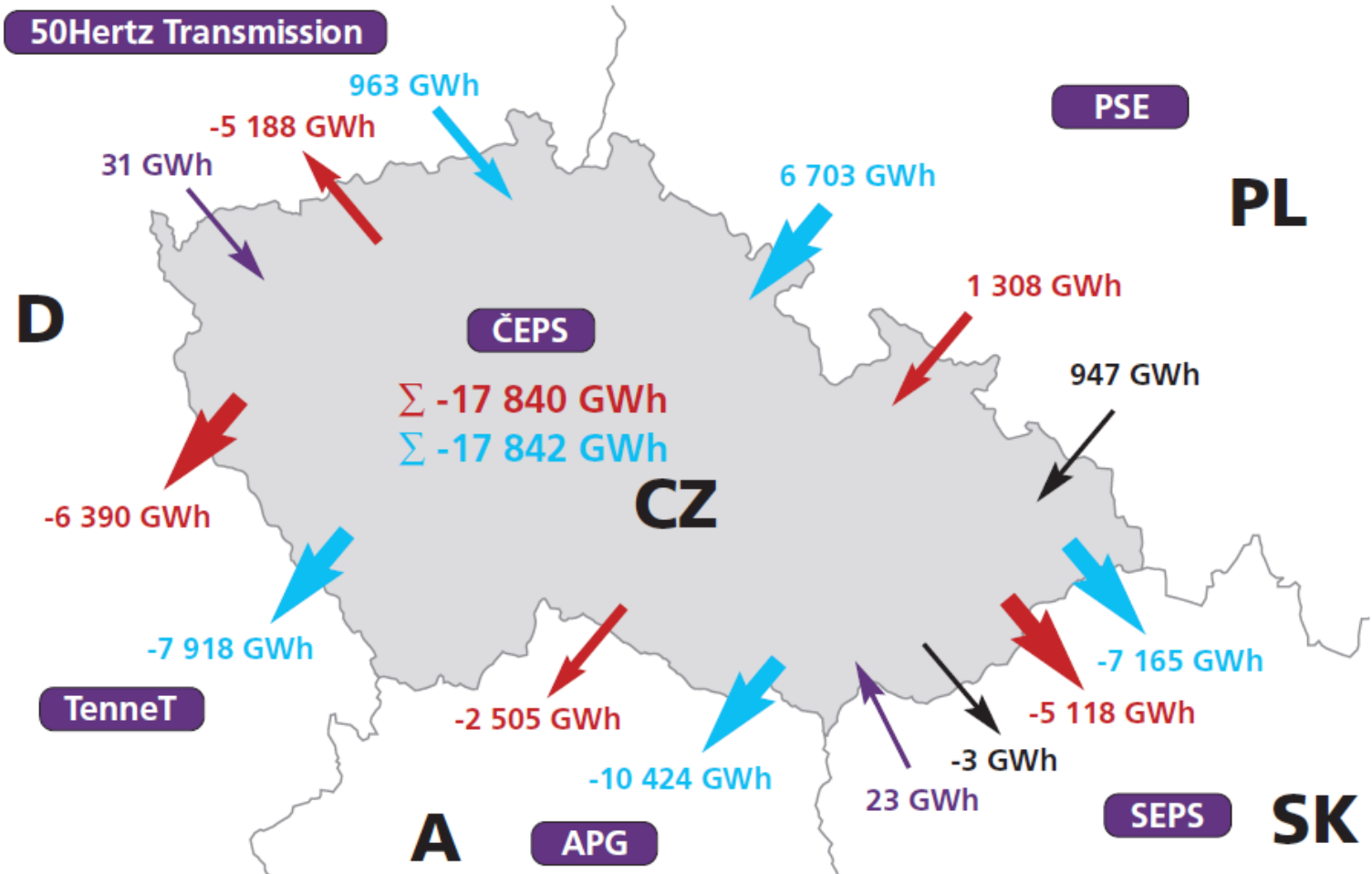
Regional Energy Relations – Crude Oil







Regional Energy Relations - Electricity

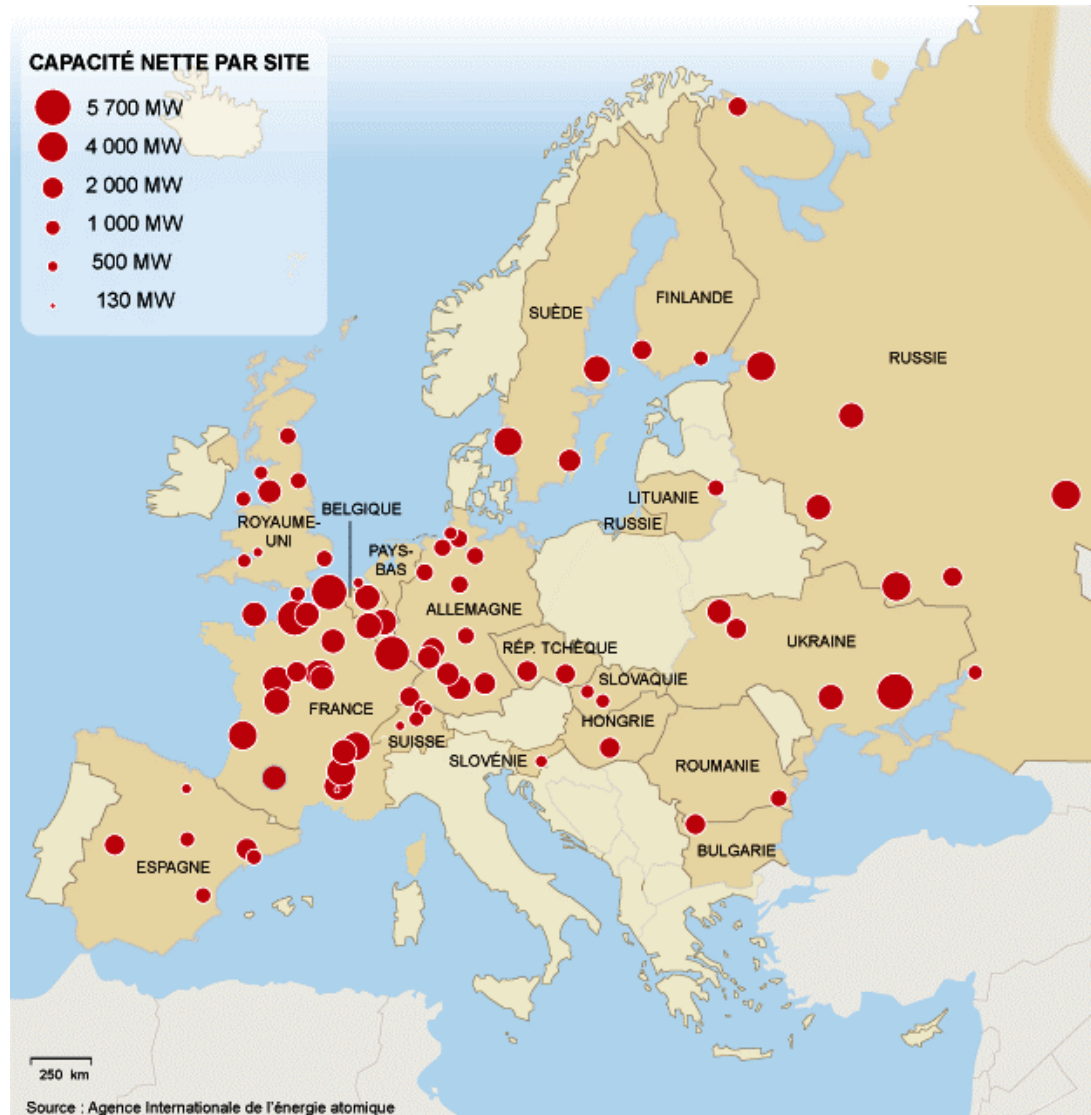


Regional Energy Relations - Electricity



-  Plánované výměny přes přenosovou soustavu, zahrnuté do regulačního salda ČR
-  Skutečné výměny přes přenosovou soustavu, zahrnuté do regulačního salda ČR
-  Skutečné výměny po linkách 110 kV (a nižších), nezahrnuté do regulačního salda ČR
-  IGCC, e-GCC

Regional Energy Relations - Nuclear



Definition of Region

- Regional Security Complexes according to Copenhagen school of security (Barry Buzan and Ole Waever)
- clusters in geographically shaped regions
- the security of each actor in a region interacts with the security of the other actors
- there is often intense security interdependence within a region, but not between regions

Czech Republic

Area	78 866 km²
Water	2 %
Population in 2011	10 436 560
Population density	134 / km²
GDP (PPP)	27 190 USD / per capita
President	Miloš Zeman
Prime Minister	Andrej Babiš
Religion	10.3 % Roman Catholic, 80 % non-declared or non-religious
Ethnic Groups	63.7 % Czechs 4.9 % Moravians 1.4 % Slovaks 29.9 % Other minorities



Five country-specific essential characteristics of energy sector



Characteristic No. 1 - Tradition

- The former use of wood fuel replaced coal-energy-intensive steam technology in the food industry, transport and industry.
- Use of relatively rich deposits of coal transportation was limited - concentration of infrastructure around the mines.
- Origins of the systematic use of coal - 1930s - Kladno, Ostrava, Rosicko-Oslavany.
- June 22, 1919 - General purpose power companies Act - the need to connect to the network.
- The trend towards centralization of production - unification of networks, voltages and frequencies.

Characteristic No. 1 - Tradition

- After nationalization of the fragmented electricity sector in 1945, the construction of a single power system began
 - Destroyed infrastructure
 - Planned industry
- 50's and 60's of the 20th century are in the spirit of intensive construction of line structures and linking of local electricity systems
 - Hodonín, Poříčí, Opatovice, Vltavská kaskáda (Lipno, Orlík etc.)
- Inefficiencies in the industry leads to excess of consumption over current production - shutting household off

Characteristic No. 1 - Tradition

- 60's and 70's are characterized by extensive coal-fired power plants
 - 70's and 80's bring nuclear energy
 - Water installations were built during these years as complementary power plants
 - The backbone of the Czech electricity is thus built on this triangle of coal-fired, nuclear and hydro power plants
- => Czech historical tradition of Energy

Characteristic No. 2 – Ministers of Industry and Trade

- Ing. Vladimír Dlouhý, CSc. 1.1.1993 – 2.6. 1997 Fakulta informatiky a statistiky VŠE
ABB, KSK Power Ventur, Pač. komise
- JUDr. Karel Kühnl 2.6. 1997 – 22.7. 1998 Právnická fakulta UK
- Doc. Ing. Miroslav Grégr, CSc. 22.7. 1998 – 15.7. 2002 Strojní fakulta ČVUT (Atomic grandpa)
Svaz průmyslu České republiky
- Ing. Jiří Rusnok 15.7. 2002 – 19.3. 2003 Národohospodářská fakulta VŠE
- Ing. Milan Urban 19.3. 2003 – 4.9. 2006 Hutnická fakulta VŠB v Ostravě
- Ing. Martin Říman 4.9. 2006 – 8.5. 2009 Fakulta elektrotechnická VUT v Brně
Středočeská energetická, a.s.; ČEZ, a.s.; ČEPS, a.s.; SPČR
- Ing. Vladimír Tošovský 8.5. 2009 – 13.7. 2010 Fakulta elektrotechnická ČVUT
Středočeská energetická, a.s.; ČEZ, a.s.; ČEPS, a.s.
- Ing. Martin Kocourek 13.7.2010 – 14. 11. 2011 Fakulta stavební ČVUT
Unipetrol, ČEZ
- MUDr. Martin Kuba 16.11 2011 – 10.7.2013 1. lékařská fakulta Univerzity Karlovy
Českobudějovické teplárny
- doc. Ing. Jiří Cieńciała, CSc. 10.7.2013 – 29.1.2014 Ekonomická fakulta VŠB v Ostravě
Třinecké železárně, Svazu průmyslu ČR
- Ing. Jan Mládek, CSc. 29.1.2014 – 28.2.2017 VŠE, Prognostický ústav AVČR
- Ing. Jiří Havlíček, MBA 4.4.2017 – 13.12.2017 Národohospodářská fakulta VŠE
- Ing. Tomáš Hüner 13.12.2017 – 27.6.2018 Kat. tepel. strojů a jad. zařízení FS na VUT
- Ing. Marta Nováková 27.6.2018 – to date System engineering, VŠB TUO

Characteristic No. 3 – Privatization

- Energy sector was public service until 1990
 - Politics/strategies and company praxis worked in positively complementary relation
- Since 1990 it is private activity
 - Politics/strategies and company praxis worke in dependent relation, company praxis must deal with restrictive politics/strategies (domestic and EU level)

Characteristic No. 4 – Structural Changes

- Development after 1989

General trends in post-revolution development

- 1) Replacement of fully controlled and directly managed energy sector with a system reflecting the interests of the new state
- 2) The process of entering into EU

Characteristic No. 4 – Structural Changes

- Phase 1 - the restructuring of centrally controlled energy system
- Phase 2 - privatization of key energy companies
- Phase 3 - a stable situation with finished privatization and concentration on completion of the liberalization of energy sector (EU entry).


Characteristic No. 4 – Structural Changes

- Phase 1 - the restructuring of centrally controlled energy system
 - 50 state enterprises, restructuring of coal sector, unbundling (CEZ, CPP)
- Phase 2 - privatization and liberalization of key energy companies
 - Natural gas (Transgas), Oil (refineries, transport) vs. electricity (CEZ)
- Phase 3 - a stable situation with finished privatization and concentration on completion of the liberalization of energy sector (EU entry).
 - Current situation: stable energy sector with strong national company, diversification of oil and gas, better energy efficiency and ecologization of energy sector, liberalized market with electricity and gas, however high energy intensity (1/3 above EU average), dependence on coal and nuclear, export of electricity, old production units etc.

Characteristic No. 4 – Structural Changes

- Until 1990, the vast majority of energy companies was in public/state ownership - a very long tradition
- After 1990, the privatization came into process, which has been far from successful in some sectors
- At the same time the transition to a democratic system took place
- And concurrently the EU liberalization process took place

As a result, these were **major changes** that **induced resistance** and chaos among cadres and people who have studied and acquired their work experience in the energy in the period of socialism



Characteristic No. 5 – Status of the power utility sector base

- Coal (!)
 - Uranium
 - Water
 - Gas from Russia
-
- Unsuitable geographical and meteorological conditions for renewables development

Czech Energy Sector

Key Energy Statistics

Source	Consumption	Imports	TPES share	Electricity Generation share
Crude Oil	9.81 Mt	98%	17.1%*	0.1%
Natural Gas	8.41 bcm	111%	15.8%	1.3%
Coal (all types)	52.3 Mt	6%	42.7%	57.1%
RES	-	-	7.5%**	9.2%
Nuclear Energy	-	-	17.2%	32.3%

* Oil products imports add another 3.1% of TPES share

** Biofuels and waste stand for 6.5% of TPES share and 3.2% of Electricity Generation share

Note: 2011 data; Source: *U.S. Energy Information Administration; International Energy Agency; OECD & IEA, 2013; compiled and calculated by T. Vlcek*

Installed Capacity

Installed Capacity in the Czech Electricity Grid on 31 December 2017			
Type of Power Station	Installed Capacity (MWe)	Production (brutto, MWh)	Percentage (%)
Thermal Power Station	11,075.4	45,431.7	49.7 / 52.2
Gas Combined Cycle Power Station	1,363.5	3,722.4	6.1 / 4.3
Gas Fired Power Station	895.9	3,719.6	4.0 / 4.3
Hydroelectricity	1,092.7	1,869.5	4.9 / 2.1
Pumped-storage Hydroelectricity	1,171.5	1,170.5	5.3 / 1.3
Nuclear Power Station	4,290.0	28,339.6	19.3 / 32.6
Wind Power	308.2	591.0	1.4 / 0.7
Solar Power	2,069.5	2,193.4	9.3 / 2.5
Geothermal Power	0	0	0 / 0
Total	22,266.7	87,037.6	100 / 100

Source: Energetický regulační úřad, 2018, s.5, 40

Strategic conceptual documents of the Czech Republic

ODU

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ba



Dana Drábová

řehledkyně Státního úřadu
pro jadernou bezpečnost



Václav Pačes

ředseda Účastné společnosti
České republiky

Basic documents

- Raw Materials Policy
- Conception of State Raw Materials Security and Energy Security
- Energy Policy
- State Energy Policy

Basic documents

- **Raw Materials Policy**

- Prepared by MIT
- The raw material policy is a summary of all activities the state uses to influence exploration and use of domestic raw material resources (taking into account the public interest and the protection of natural, cultural and landscape values) and the acquisition of raw materials abroad in order to ensure the running of domestic economy.
- The object of the raw material policy includes fuels, ores, industrial minerals and construction materials.
- **Valid document from 1999**
- The document has been evaluated in 2004
- In July 2012 and in March 2014 (after EIA) submitted an update to the document
- The basic idea is preferential use of domestic mineral resources and conversion of waste into energy
- In December 2015 a new update was submitted (following the approval of the updated State Energy Policy)
- Accepted in June 2017

Basic documents

- • **Conception of State Raw Materials Security and Energy Security**
 - Prepared by MIT
 - 20 years outlook
 - Czech Republic does not has a document in this field. This issue is partially or marginally dealt within other strategic materials, especially the State Energy Policy updates, the Raw Materials Policy, and the Security Strategy.
 - The document is aimed at identifying and analyzing the security risk from outside the country, from international environment.
 - Basis presented to the Government 9. 6. 2011 and approved 17. 8. 2011, at the moment the document is still being processed

Basic documents

- **Energy Policy**

- Used to be prepared by MIT
- Energy policy was a basic document expressing targets in the energy sector related to major economic and social development in 1990s
- 15-20 years outlook

- It was the first energy policy document of the Czech Republic - EP 1992 (air pollution, diversification of oil supplies)
- Consequently, there were efforts to update in (1997, privatization, supply of natural gas)
- New document in 2000 (regulation of monopolies)
- However, the document ceased to play its strategic role just within two years and the Government commenced preparations of a new policy document of the Czech Republic - the State Energy Policy

Basic documents

- **State Energy Policy**

- Prepared by MIT
- The State Energy Policy is the fundamental component of the economic policy of the Czech Republic. The State Energy Policy specifies the state's priorities and determines the objectives to influence the development of energy sector over the next 30 years (within the market-oriented economy).
- Original document approved 10. 3. 2004
- In October 2009 - the first draft update of SEP (not approved)
- In February 2010 - the second draft update SEP (not approved)
- In August of 2012 - the third draft update SEP (went through the environmental impact assessment process with 3,681 comments)
- In October 2012 - the fourth draft update SEP (the proposal was revised after the closure of the tender for the construction of new nuclear units in April 2014)
- In December 2014 - the fifth (revised) draft update SEP (2014 interdepartmental commenting procedure, EIA used from the fourth draft, ME and tripartite approval in December 2014, and Governmental approval in **May 2015**)

Relations Among the Basic Documents

