

Environmental Economics in the Central European Context

Online Time: Tuesday 4pm – 5:30pm

Location: <https://call.lifesizecloud.com/813390>

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Reading materials: <http://home.cerge-ei.cz/richmanova/Teaching.html>

Renewable Energy in CR

The renewable energy sources are generally perceived as a clean and environmentally friendly, because they do not pollute the surroundings as much as the fossil fuel sources during their operation. They are also beneficial in terms of climate change mitigation; mainly they do not contribute to greenhouse gas emissions. Additionally, they are also significant in terms of energy self-sufficiency of the Czech Republic, they do not directly stress the environment and their effects on human health are – compared with other energy sources – minimal. The often discussed issue of renewable resources is the occupation of arable land by photovoltaic power plants and biomass or the disruption of the aesthetic values of the landscape by wind turbines.

European Context (guidelines)

Renewable energy

Renewable energy directive

The Renewable Energy Directive sets rules for the EU to achieve its 20% renewables target by 2020.

National renewable energy action plans 2020

EU countries' plans for meeting their 2020 renewable energy obligations.

Progress reports

EU countries publish progress reports every two years to show how they are moving towards the EU's 2020 renewables' goals.

Support schemes

Guidance for EU countries when designing and reforming support schemes for renewables.

Biomass

Using biomass as an energy source can lower the EU's external energy dependence and reduce greenhouse gas emissions.

Biofuels

The use of biofuels made from biomass provides a renewable alternative to fossil fuels in the EU's transport sector.

Onshore and offshore wind

Wind power is a renewable energy source that is a key enabler of the clean energy transition.

Ocean and hydropower

Oceans consist of vast renewable energy resources that can contribute to decarbonise power systems

Initiatives and events

Promoting clean energy, sharing knowledge and expertise with regional and international partners.

https://ec.europa.eu/energy/topics/renewable-energy_en

NATIONAL POLICY CONTEXT:

State Environmental Policy of the Czech Republic 2012–2020

- to reduce greenhouse gas emissions
- to secure a 13% share of energy from renewable sources in gross final energy consumption by the year 2020
- to secure a 10% share of renewable energy in transportation by the year 2020

State Energy Concept of the Czech Republic

- support production of electricity and heat from renewable energy sources
- develop cost-effective renewable energy sources with the gradual removal of financial support for new sources
- effective support of the state in RES access to distribution network
- streamline the permitting processes
- promote the technological development and pilot projects and concurrently the public acceptability of RES development in order to achieve the proportion of RES in electricity production over 15%

National Action Plan for Energy from Renewable Sources of the Czech Republic

- achieve a 14% share of energy from renewable sources in gross final consumption of energy in the year 2020

Action Plan for Biomass in the Czech Republic for the period 2012–2020

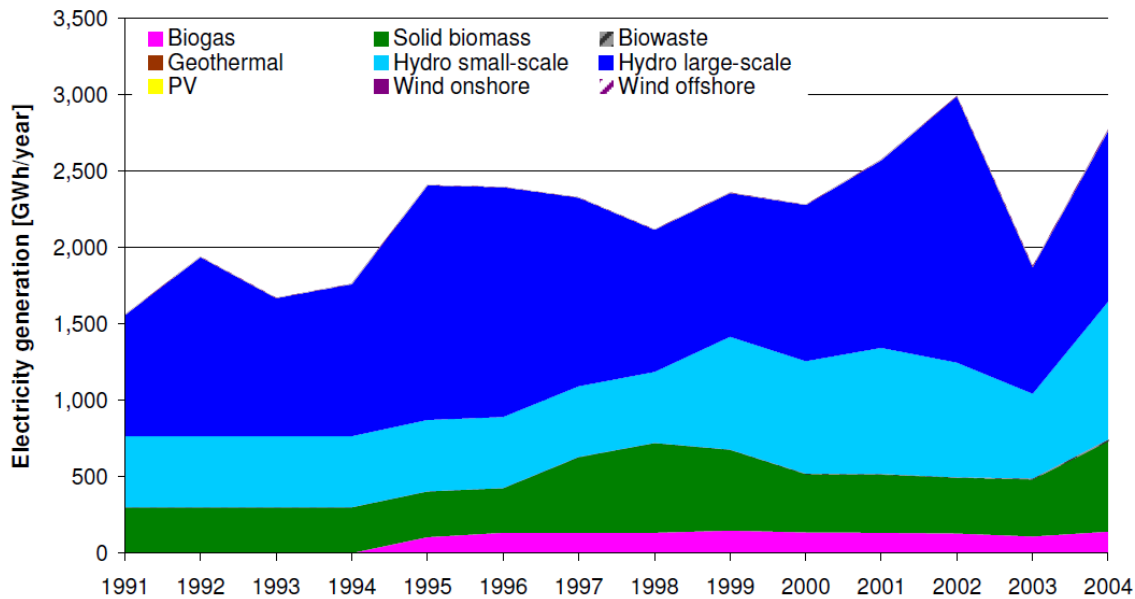
- determine the potential of various types of biomass in the Czech Republic for efficient energy use while respecting food self-sufficiency of the Czech Republic

Longer-term trends (pre-accession and European period):

Visible progress has been achieved in increasing the share of renewables over the past 20 years. This was achieved with the help of various government support programs. Some of them were designed and implemented in more successful way than others (see e.g. problems with feed-in tariffs for solar energy and their retrospective taxation introduced in times of economic crisis).

Years after the fall of communism:

Electricity generation from renewable energy sources by type (GWh)



Source: European Commission

http://ec.europa.eu/energy/res/legislation/share_res_eu_en.htm

Mostly based on CENIA's Report on Renewables (2014 and 2018 reports, see the materials for Lectures 6 and 7):

Renewable sources include **wind energy, solar energy, potential water energy, geothermal energy and biomass energy**. Despite the fact that these resources are inexhaustible, their availability is limited in time and space due to their dependence on climatic, meteorological and geographical conditions. Production of electricity and heat from these sources is limited by those factors, and at the same time it is difficult to adjust to the current market demand. Nevertheless, RES are beneficial in terms of energy security and sustainable development.

Advantages of RES:

- contribute to the **reduction of pollutant emissions** and of greenhouse gases.
- they increase the country's **energy security and independence** on the international trade in energy commodities.

Disadvantages:

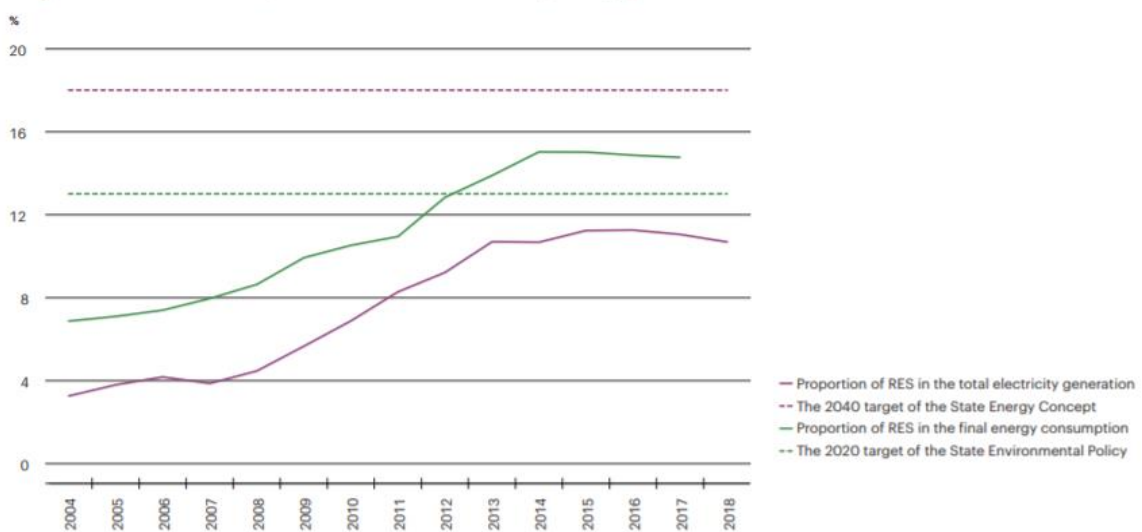
- considerable dependence on climatic, meteorological and geographical conditions,
- energy production may not be regulated according to the actual demand.

Electricity generation from renewable sources has stabilized after a **period of steep growth in 2008–2013**, when RES were widely supported. **Since 2014, the amount of electricity produced from RES has stagnated with only slight year-on-year fluctuations**. In 2018, 9,404.0 GWh of electricity was produced from renewable sources.

There are two strategic goals for renewables in the Czech Republic. The State Environmental Policy of the Czech Republic has taken over the target arising from EU Directive 2018/2001 to ensure **13% share of RES in gross final energy consumption by 2020**. In 2017, the value for the Czech Republic was 14.8%, and the indicative target was reached already in 2013. The second target, arising from the State Energy Concept, is to achieve the proportion of **RES in electricity production** in the range of 18%–25% by 2040. In 2018, that share amounted to 10.7%.

Source: https://www.cenia.cz/wp-content/uploads/2020/04/Report_on_the_Environment_of_the_Czech_Republic_2018.pdf (pp 193-196)

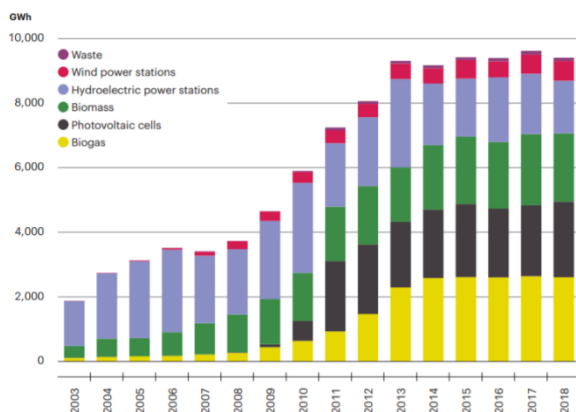
Targets for RES and their implementation in the Czech Republic [%], 2004–2018



The aim of the State Energy Concept of the Czech Republic is to ensure by 2040 the share of annual electricity generation from RES and secondary sources in the range of 18–25%, in the Chart only the lower limit is marked, i.e. 18%. Data for the RES share in the final energy consumption in 2018 were not available at the time of publication due to the methodology of their reporting.

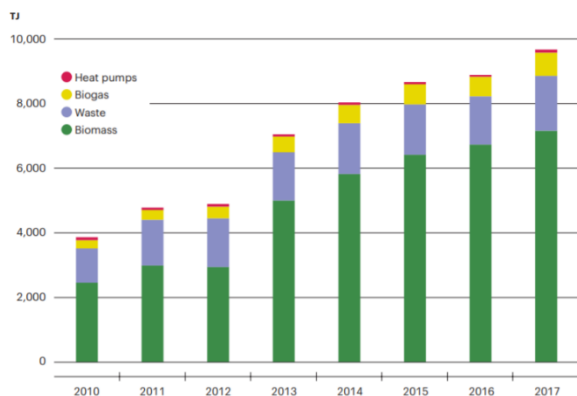
Data source: Energy regulatory Office, Ministry of Industry and Trade

Electricity generation from RES in the Czech Republic [GWh], 2003–2018



Data source: Energy Regulatory Office

Gross heat production from RES and biofuels in the Czech Republic [TJ], 2010–2017



In the year 2014, total of 9,170 GWh was produced from **renewable sources**, which represents after 6 years of significant growth for the first time a slight year-to-year decline (by 0.8%). This was caused by the decrease in the production in **hydro power plants** by 30.2% (due to extremely low level of water courses). **Also wind power** recorded a slight decline in production (by 0.8%) also due to meteorological conditions (installed capacity increased by 3.0%). The largest year-to-year jump in production occurred for the supported sources: for electricity production from **biomass** with a recorded increase of 19.2% and from **biogas** where the production increased by 11.9%. [note how some RES are quite sensitive to current meteorological conditions... sometimes big fluctuations in supply are one of the key problems]

Shares of RES in energy production in 2014 and in 2018]

- **28.0%** biogas (**27.7%, 2,607.2 GWh**),
- **23.2%** photovoltaics (**24.9%, 2,339.7 GWh**),
- **21.9%** biomass (**22.5%, 2,118.7 GWh**)
- **20.8%** hydroelectric (**17.3%, 1,628.8 GWh**, excluding pumped storage).
- **5.2%** wind (**6.5%, 609.3 GWh**), naturally limited potential in CR
- **0.9%** biodegradable fraction of municipal solid waste (waste category) (**1.1%, 100.2 GWh**)

Relatively diverse structure of RES came about only in 2011, when RES received support; before, the largest share were the hydropower stations; other sources were minimal.

Shares RES in heat production in 2014 and in 2017]

The production of heat from RES grew significantly in the reporting period in the Czech Republic. In 2017, 9,666 TJ was produced, i.e. a year-on-year increase of 8.8%, and in 2010–2017 the production of heat from RES grew even 2.5 times.

- **81.5%** biomass **74.1%** (mostly wood for local heating in households 😞)
- **6.4%** heat pumps (**0.9%**),
- **6.0%** biogas, (**7.4%**)
- **5.1%** waste, (**17.6%**)
- **1.0%** solar thermal collectors (**negligible**)

Key messages of 2014 REPORT (unless stated otherwise focuses on annual changes):

KEY MESSAGES →

😊 Electricity generation from the supported sources, i.e. biomass and biogas has increased by 19.2%, respectively by 11.9%.

The shift towards greater diversity of energy sources is beneficial in terms of greater energy independence and security.

😞 Heat production from renewable energy sources is mostly influenced by the use of wood for heating households.

😞 The slight year-to-year decrease in electricity production from renewable energy sources in the Czech Republic was caused by the decrease of hydropower production due to low water levels in water courses.

Key messages of 2018 report (unless stated otherwise focuses on annual changes):

Key messages

The production of heat from RES has increased significantly, in the period 2010–2017¹⁵ it increased 2.5 times.
The target of the share of RES in gross final energy consumption of 13% by 2020, set out in the State Environmental Policy of the Czech Republic 2012–2020, has been met since 2012, in 2017¹⁶ it was 14.8%.



Renewable electricity generation is stagnating with only slight year-on-year fluctuations.
The RES share in the electricity production was 10.7% in 2018, the target of the State Energy Concept is to achieve the proportion in the range of 18%–25% by 2040.



Overall assessment of the trend

Change since 1990

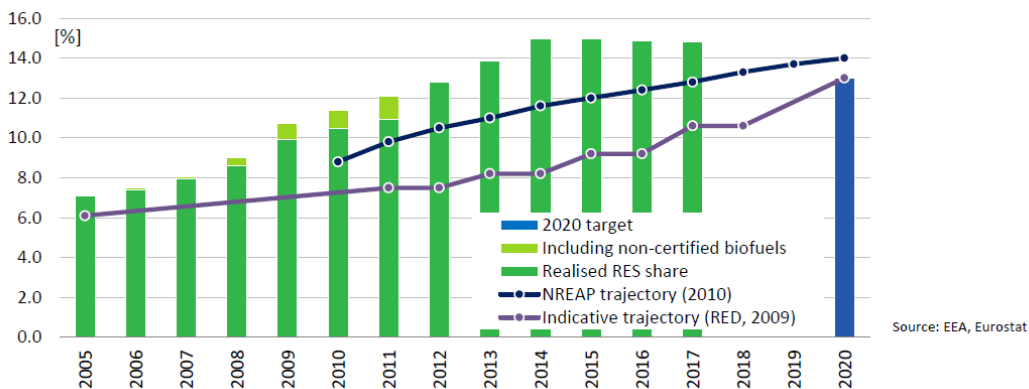
Change since 2000

Change since 2010

Last year-on-year change

More details from other recent reports:

EurObserv'ER 2019 report <https://www.eurobserv-er.org/euroobserver-policy-files-for-all-eu-28-member-states/>

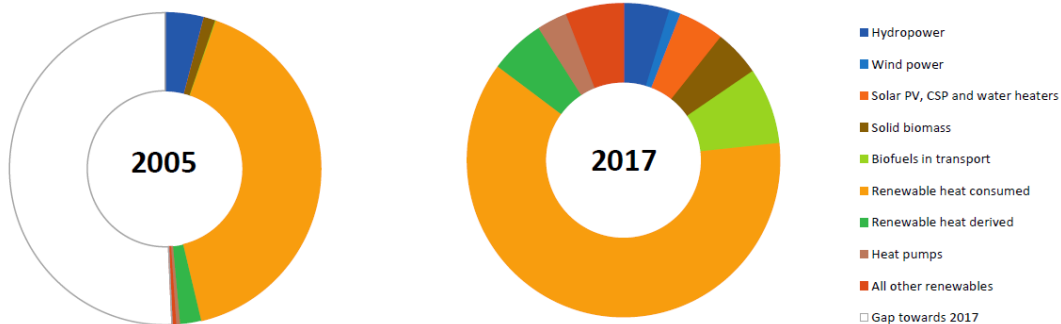


Abbreviations used:

- RES: renewable energy sources
- RES-E: renewable electricity
- RES-H/C: renewable heating/cooling
- RES-T: renewable transport fuels

Data for 2017

Overall RES share:	14.8%	Avoided fossil fuels:	5.7 [Mtoe]
Overall RES 2020 target:	13.0%	Avoided fuel expenses:	1.3 [billion euro]
Share RES-E in electricity:	13.7%	RES Turnover:	2090 [MEUR]
Share RES-T in transport:	6.6%	RES Employment:	32500 [jobs]
Share RES-H/C in heating:	19.7%		



Source: Eurostat, 2019.

Note: A National Renewable Energy Action Plan (NREAP) is a detailed report submitted by countries outlining commitments and initiatives to develop renewable energy that all member states of the European Union were obliged to notify to the European Commission by 30 June 2010.

	2005		2017		
	Energy		Energy	Employment	Turnover
Hydropower	161.0 ktoe		191.6 ktoe	1500 Jobs	110 MEUR
Wind power	1.4 ktoe		47.9 ktoe	900 Jobs	70 MEUR
Solar PV, CSP and water heaters	0.0 ktoe		188.6 ktoe	1500 Jobs	110 MEUR
Solid biomass	48.2 ktoe		190.3 ktoe	12300 Jobs	840 MEUR
Biofuels in transport	2.7 ktoe		313.8 ktoe	8400 Jobs	450 MEUR
Renewable heat consumed	1636.9 ktoe		2475.1 ktoe		
Renewable heat derived	90.2 ktoe		228.8 ktoe		
Heat pumps	15.5 ktoe		124.8 ktoe	2600 Jobs	180 MEUR
All other renewables	14.7 ktoe		236.8 ktoe		
Gap towards 2017	2027.1 ktoe				

Source: Eurostat, EuroObserv'ER, 2019.

Hydropower jobs & turnover only covers 'small hydropower'. PV=Photovoltaics, CSP=Concentrated Solar Power. Biofuels in transport only covers compliant fuels (employment and turnover additionally cover the non-compliant biofuels). Derived heat includes heat produced in main activity producer plants and heat sold produced in autoproducer plants. Its counterpart is the final heat consumption in the final consumption sectors (such as households).

More graphs on Renewables progress in CR from EU's report:

<https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/renewable-energy-deployment-european-union-renewable-energy-european-union-further-renewable> part on Czech Republic starts p. 51)

The report comments on progress achieved in the period of 2005 to 2015.

- *ktoe = kilotonnes of oil equivalent

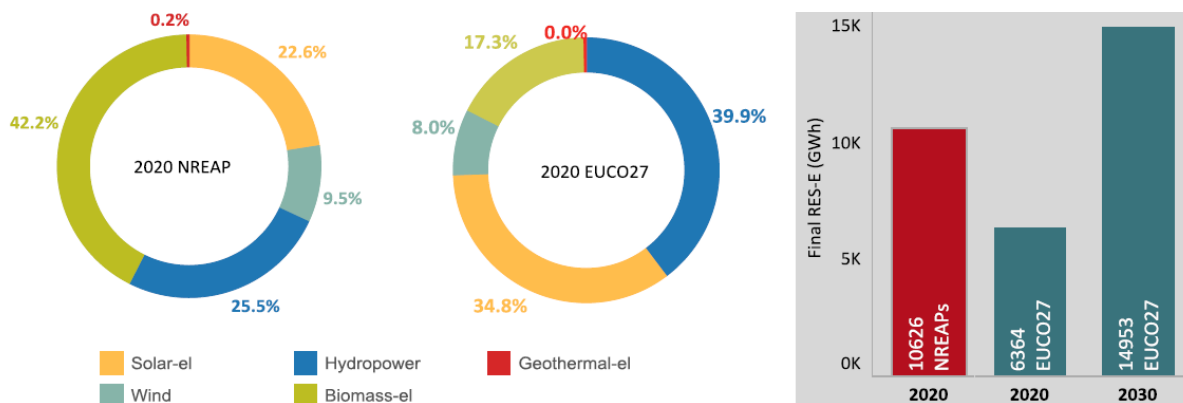


Figure 3 - 3. Final RES Electricity in Czech Republic: NREAP plan (2020) – EUCO27 projections (2020-2030)

Table 3 - 1. Final renewable energy in CZ: deviations from NREAP in electricity, heating/cooling and transport

	2010	2011	2012	2013	2014	2015
RES-el (ktoe)	↑ 3	↑ 7	↑ 11	↑ 33	↑ 52	↑ 46
RES-hc (ktoe)	↑ 265	↑ 256	↑ 274	↑ 395	↑ 414	↑ 449
RES-tr (ktoe)	↑ 15	↓ -259	↓ -24	↓ -64	↓ -67	↓ -123
RES-el (%)	↑ 0.7	↑ 1.2	↑ 1.6	↑ 4.5	↑ 6.8	↑ 5.7
RES-hc (%)	↑ 14.0	↑ 13.0	↑ 13.1	↑ 18.3	↑ 18.6	↑ 19.7
RES-tr (%)	↑ 6.3	↓ -90.8	↓ -7.5	↓ -17.3	↓ -16.1	↓ -27.1

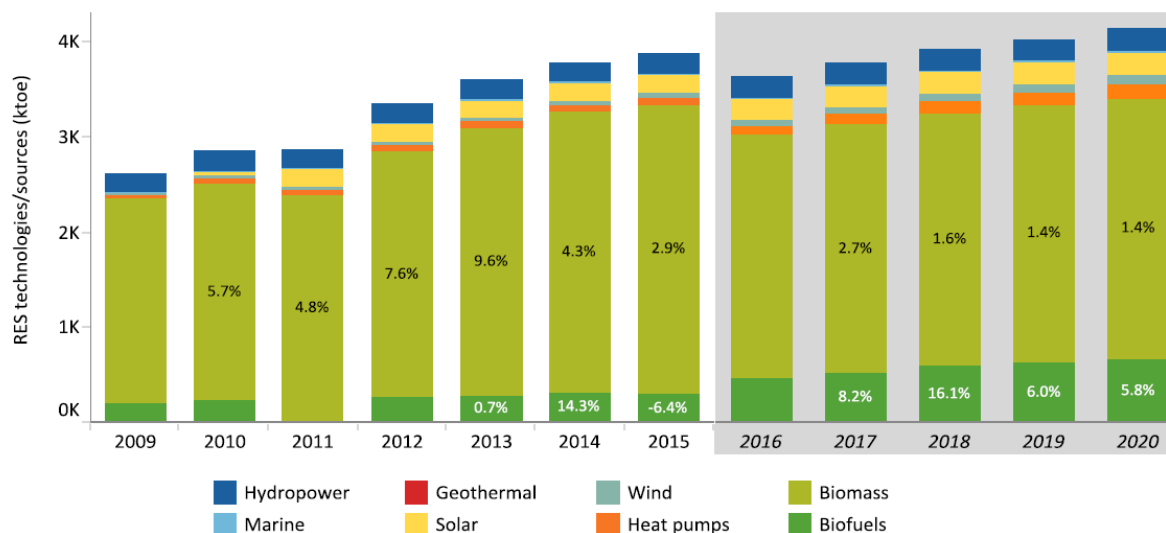


Figure 3 - 4. Annual growth of renewable energy technologies in CZ: Current (2009-2015) - NREAP plan 2016-2020

Renewable electricity installed capacity in Czech Republic increased with a CAGR¹ of 13.5% (+3011 MW) between 2005 and 2015 reaching 4192 MW. In 2015 solar technology presented 49% of renewable electricity installed capacity in Czech Republic followed by hydropower with 26%, biomass with 18% and wind with 7%.

Figure 3-5 presents the current trend of renewable electricity installed capacity in Czech Republic, the deviations (in %) from the expected developments during period 2005-2015, the 2020 NREAP plan and EUCO27² scenario projections for 2020 and 2030. As shown in this Figure, the achieved installed capacity in Czech Republic was above the expected NREAP plans throughout period 2010-2015.

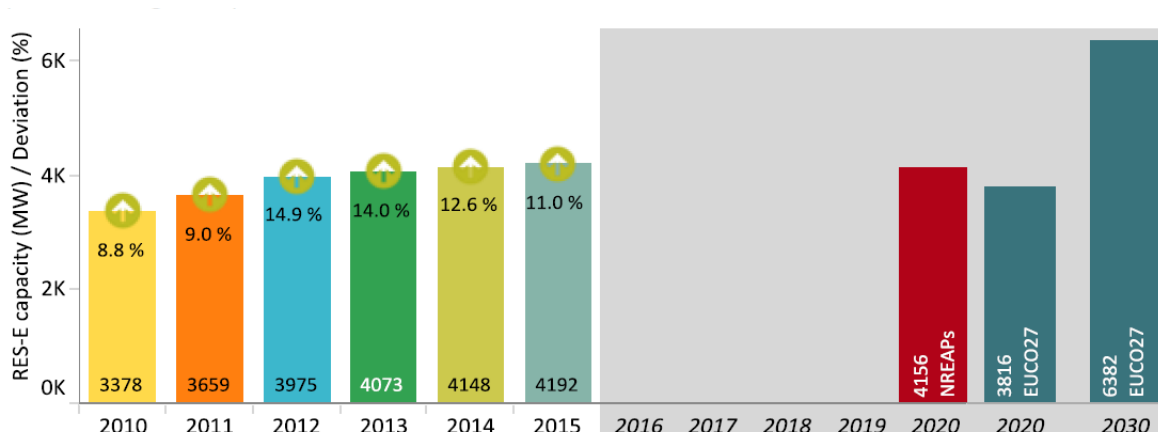


Figure 3 - 5. RES-E capacity development and deviation from NREAPs (2010-2015)- Expected capacity (2020-2030)

¹ **Compound annual growth rate (CAGR)** is the rate of return that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each year of the investment's lifespan. It is the mean annual growth rate of an investment over a specified period of time longer than one year.

² There are two core policy scenarios, EUCO27 and EUCO30, prepared by the European Commission in the context of the 2016 Impact Assessment work

Solar photovoltaic had the fastest development between 2005 and 2015 with a CAGR of 114.6% (+2074 MW) over the very low level of 1 MW in the baseline year. This technology was found above the expected NREAP capacities only during period 2012-15.

Wind power capacity developed with a CAGR of 29% (+259 MW) between 2005 and 2015 reaching 281 MW. Nevertheless the deployment of this technology was faster than expected only in year 2012 missing the plans in other years of period 2010-2015.

Biomass capacity developed with a CAGR of 18.4% (+610 MW) between 2005 and 2015 reaching 748 MW. This development was fast enough to exceed the expected NREAP capacities throughout period 2010-2015.

Hydropower capacity developed with a CAGR of 0.6% (+68 MW) between 2005 and 2015 reaching 1088 MW. This technology missed the NREAP plan only in year 2011.

Overall: The expected 2020 renewable capacity in Czech Republic is 4156 MW in which solar will remain the main contributor in renewable installed capacities with 51% followed by hydropower with 26%, wind with 14% and biomass with 9%. The EUCO27 scenario has projected a lower installed capacity in Czech Republic compared with its NREAP, at 3816 MW, with a higher contribution from solar photovoltaic (61%). According to these projections in 2030 Czech Republic is expected to have installed 6382 MW of renewable electricity, in which wind and solar photovoltaic will be the main sources.

Note: sometimes it is difficult to compare the figures, as some are percentages of "installed capacity," of "final energy production," of "final energy consumption," some in absolute units (TJ, GWh, ktoe), some in growth rates (CAGR). Also make sure to distinguish between RES for electricity and for heating. In readings, try to focus on trends and deviations from national or European targets.

MORE DETAILS ON POLICY CONTEXT - CURRENT RENEWABLE ENERGY POLICY

<https://www.eurobserv-er.org/euroobserver-policy-files-for-all-eu-28-member-states/>

Electricity from renewable sources produced by installations commissioned before 2014 is promoted mainly through

- a guaranteed **feed-in tariff**, or
- a **feed-in premium** paid on top of the (average) market price (calculated either on an annual basis (installations \leq 100 MW) or hourly basis (installations $>$ 100MW)).

In principle, plant operators can choose either option. But there are restrictions:

- a **feed-in tariff** can only be granted to
 - RES plants with an installed capacity up to 100 kW
 - (30 kW in case of rooftop or façade PV installations or 10 MW in case of hydro power)
 - PV and biogas plants are only eligible if put into operation before 31 December 2013
 - wind, hydro, geothermal or biomass plants up to 100 kW are eligible only if they were put into operation before 31 December 2015 (with the building permit before 2 October 2013)

- essentially all renewable electricity producers (including prosumers) can opt for a **feed-in premium (=green bonus)**
 - Wind, hydro, geothermal or biomass plants are eligible only if the building permit was issued before 2 October 2013 and commissioned before 31 December 2015.

OTHER SUPPORT PROGRAMS:

- **Investment subsidies** are available for:
 - Operators of hydro as well as biogas and biomass fired, power plants up to 10
 - installation of photovoltaic systems by the owners of public buildings
 - Installations producing renewable heat
- **Real estate tax exemptions:**
 - All renewable electricity plants based on wind energy, biogas, biomass and hydropower
 - Installations producing renewable heat
- **Biofuels support**
 - **Biofuels quota scheme** scheme obliges companies importing or producing petrol or diesel to ensure that biofuels make up a defined percentage of their annual fuel sales volume
 - biofuels as well as the biofuels component of mixed transport fuels are **exempt from a consumption tax**
 - electric vehicles are **exempt from the vehicles purchase tax**.
 - Electric, hybrid and other alternative fuel vehicles are **exempt from the road tax** (a tax applying to cars used for business purposes only).

Table 2: Overview of instruments used at present in the Czech Republic

<i>Instrument</i>	<i>Description</i>
Feed-in tariffs or premiums	Guaranteed sale of electricity at a pre-set preferential price or a premium on top of the revenues from electricity sold, during the support contract period. For RES-E installations not larger than a technology-specific generating capacity. Only installations commissioned before January 2014 fall under this scheme. The exception is formed by eligible hydropower installations: also new ones can benefit for the FIT/FIP scheme. For eligible hydropower installations. Apart from small-scale projects, new projects do not get feed-in support.
Investment subsidies	Certain hydropower installations as well as RES-H installations can benefit from subsidies, financed by the ERDF
Tax credits schemes	Renewable heating & cooling installations in buildings are eligible for an exemption from property tax for building owners. Biofuels are exempt from a consumption tax.
Biofuels quota scheme	Importers/suppliers of transport fuels are subject to a renewable quota scheme for biofuels. Compliance based on sample testing rather than certificates-based. No (direct) incentives for other alternative transport fuels.

Table 1: Overview of support schemes to promote renewable energy in the Czech Republic

	NON-FISCAL SUPPORT SCHEMES						FISCAL AND OTHER STATE FUNDED INCENTIVES			
	Feed-in tariffs 1)	Feed-in premium 1)	Tenders	Quota obligation with Tradable Green certificates	Quota obligation without Tradable Green certificates	Net-metering/ net-billing	Investment subsidies 2)	Tax credits mechanism I 3)	Tax credits mechanism II 4)	Soft loans
RES-E										
- Offshore wind										
- Onshore wind	x	x						x		
- Solar	x	x						x		
- Hydro	x	x					x	x		
- Geothermal	x	x								
- Solid biomass	x	x					x	x		
- Biogas	x	x					x	x		
RES-H/C										
- Solar thermal							x	x		
- Geothermal							x	x		
- Biomass							x	x		
- Biogas							x	x		
- Small scale installations, e.g. solar thermal collectors, heat pumps, biomass boilers and pellet stoves							x	x		
- Others, i.e. aerothermal, hydrothermal							x	x		
RES-T										
- Bio gasoline					x				x	
- Biodiesel					x				x	

What is meant by ...?

Auctions for granting renewable energy support	An auction is a process of granting production or investment support to renewable energy projects based on the lowest bids by eligible project developers.
Feed-in tariff (FiT)	A support scheme which provides for a technology-specific remuneration per unit of renewable energy payable to eligible renewable energy producers. A proper, periodic review of FiT rates is often undertaken with the aim to prevent both too high FiTs so as to minimise regulatory rents, i.e. supra-normal returns and too low FiTs to preclude below-target market uptake because of FiT levels that are perceived by market participants to be less attractive. In addition, feed-in tariffs often include "tariff depression", a mechanism according to which the price (or tariff) ratchets down over time.
Feed-in premium (FiP)	A scheme which provides for a support level per unit of renewable energy to eligible renewable energy producers, typically for a period of 10-20 years, at a pre-set fixed or floating rate. The premium is typically adjusted periodically to exactly offset change in the average energy wholesale market price, based on a pre-specified benchmark market price. A floating FiP may move freely or may only be allowed to move within a pre-set interval.
Grants	Grants are non-repayable funds disbursed by one party (grant makers), often a government department, corporation, foundation or trust, to a recipient, often (but not always) a non-profit entity, educational institution, business or an individual. (Source: Wikipedia.org)
Green public procurement	In Green public procurement contracting authorities take environmental issues into account when tendering for goods or services. The goal is to reduce the impact of the procurement on human health and the environment. (Source: Wikipedia.org)
Renewable quota scheme (RQS)	A RQS mandates certain market actors (typically retail suppliers or large energy end-users) to respect a pre-set minimum share or amount of their total energy procurements from renewable sources of energy. Typically a tradable green certificate (TGC) scheme is operated to enable the obligated parties to prove their compliance with the prevailing renewable quota target by means of TGCs.
Sliding feed-in-tariff	A FiT scheme which pre-sets technology-specific declining feed-in tariffs for certain prospective vintages in line with the technology-specific learning curve, as projected by the National Regulatory Agency (NRA). Often a depression rate is used indicating the %/annum decrease in the rate level.
Soft loans	Loans at concessional (below market-based) terms, for example at sub-market-conform interest rates, made available in several Member States to stimulate certain renewable energy technologies.
Tax credits	These are amounts a tax paying entity is allowed to deduct when declaring payable taxes, for example company tax or income tax, to the tax authorities, for example the producer tax credits (PTCs) used in the United States to stimulate among others wind energy deployment.

Additional Information on Czech Feed-in tariffs**Feed-in tariff**

From Wikipedia, the free encyclopedia

*A **feed-in tariff** (FIT, FiT, standard offer contract, advanced renewable tariff, or renewable energy payments) is a policy mechanism designed to accelerate investment in renewable energy technologies. It achieves this by offering long-term contracts to renewable energy producers, typically based on the cost of generation of each technology. Rather than pay an equal amount for energy, however generated, technologies such as wind power and solar PV, for instance, are awarded a lower per-kWh price, while technologies such as tidal power are offered a higher price, reflecting costs that are higher at the moment.*

In addition, feed-in tariffs often include "tariff depression", a mechanism according to which the price (or tariff) ratchets down over time. This is done in order to track and encourage technological cost reductions. The goal of feed-in tariffs is to offer cost-based compensation to renewable energy producers, providing price certainty and long-term contracts that help finance renewable energy investments.

The generous feed-in tariff system in the Czech Republic together with falling costs of solar cells manufacturing caused in 2009-2011 a race in installation (literally) of new PV capacities. Total installation of 65 MWp was registered at the end of the year 2009, 462 MWp in 2010 and 1952 MWp at the beginning of the year 2011. The boom has peaked in late 2010/early 2011 after the Czech Senate approved a new law of 26% tax on electricity generation from PV over the next three years, as well as 32% tax on carbon credits awarded to solar companies in the next two years to all PV plants that were guaranteed to receive a fixed feed-in tariff for a period of 20 years. The total installed PV capacity could settle somewhere near 2000 MWp. [See the article(s) below]

Despite Czech Republic weather conditions are not the best suitable for PV installations, installed capacity per citizen ratio is one of the highest in the world [as of 2012]. Comparison of monthly average electricity generation, under normal conditions, was made between Czech Republic and Italy. Solar panels in Czech Republic generate only 62% of electricity compared to the same installed capacity in Italy.

(similar problem with too generous tariffs in e.g. Germany or Spain, German system was however much more flexible and they managed to react to a spur of PV in much less controversial way)

Further REQUIRED readings:

Pokorná – Renewable energy potential in the Czech Republic: Obstacles to achieve it

What she has to say on **Solar (support problems) in CR:**

- Boom of installation of photovoltaic systems occurred in 2009 and 2010 due to an unmanaged subsidized price system.
- set up in such a way that it did not allow for a quick and simple reduction in the amount of subsidized feed-in prices at a rapid reduction in panel prices
- in those years, the installed capacity of photovoltaic power plants in the Czech Republic has increased to nearly 2000 MWp, also almost all photovoltaic farms with a capacity of more than 5 MWp were built at that time
- This led to significant increase in the costs of RES support => a number of restrictive measures were adopted => Unfortunately, this had a strong impact not only on the development of photovoltaics **but it caused a stagnation of the RES industry in the Czech Republic as a whole.**[p.2]
- Nowadays, only small, decentralized PV sources on buildings are installed due to the abolition of the guaranteed prices.
- If weather conditions are good, Czech installed photovoltaic power plants cover quite a part of the daily peak consumption from spring to autumn. Generally, photovoltaic power plants in the country currently represent about 2.5% of the country's production.
- *However, there is still considerable space for increasing photovoltaics in the Czech Republic. The priority should be given to decentralized installations and to buildings. According to ENACO report, the residential and family houses have potential of about 4.5 GWp, and potential of other buildings is up to 7.3 GWp.*[p.2]

- *Since adopting the legislation on the support for renewable energy in 2005, the Czech government has had a **non-conceptual approach** and has **failed to respond** to the dynamic developments of photovoltaics (removing problematic limits to year-on-year changes in the purchase price, retroactive measures in relation to already implemented projects, etc.).*
- *Solar energy was also harmed by a negative campaign against investors in this field. These trends have led to a stagnation of further use of solar power in the Czech Republic.*

...on **WIND** in CR

- The realizable potential of wind power in the Czech Republic is, according to the study of the Institute of Atmospheric Physics of the Academy of Sciences of the Czech Republic, up to 2,300 MW of installed capacity with an anticipated annual production of 5.9 TWh of electricity (taking into account local wind conditions, protected areas, national parks, bird reserves and other sensitive areas)
- need to overcome some “*unjustified initiatives by certain regions*” [p.3]
- another problem is that favourable wind conditions are mostly in the mountains and protected natural areas.
- Another limiting factor to the use of wind energy in the Czech Republic is the high installed capacity in neighbouring Germany.
 - with large surpluses of wind power, the price drops very low
 - Czech installations can hardly compete with farms built on the windy coast in northern Germany
 - decentralized installations covering local requirements could still be beneficial though
- the reluctance of the population and local authorities, lengthy authorization procedure, and the abolition of subsidies to electricity prices from wind power plants, have stopped the construction of new installations

...on **BIOGASS** in CR

- Current installed capacity of biogas is 332 MW, while its potential is 485 MW in 2030.
- due to **citizens’ complaints**, some biogas stations **had to stop functioning** because of the **odour**.
- Some civic associations have since fought against the construction of other biogas stations
- This was caused by insufficient knowledge of the fermentation process and the operators’ inexperience
 - errors in choosing the right technology
 - errors in project design
 - enormous efforts to save money on investment and operating costs
 - leading to the breach of technological discipline.

The biggest challenge to sufficient employment of RES “*is the Czech legislative environment*” [p4]

- Low flexibility of the state in setting the conditions for
- Overlapping of operating and investment support in the area of biogas
- Subsequent restrictive measures against existing and new RES sources after 2010

- Massive media campaigns against photovoltaics and RES in general.
- Considerably restrictive legislative proposals (reevaluation of the payback period, subsidization of the aid).
- Repetitive legislative changes.
- Unresolved and non-functional system for the support of heat production from RES (especially the use of biomass).
- Negative attitude of local and regional authorities (especially to wind power plants and biogas stations)
- Administrative barriers for so-called "micro-sources" and for the production of electricity from RES for own consumption.
- State hesitation in how to support the use of RES and in the question of environmental tax reform

Trmalova - Support for renewable energy in the V4: what went wrong? (Nov 2017)

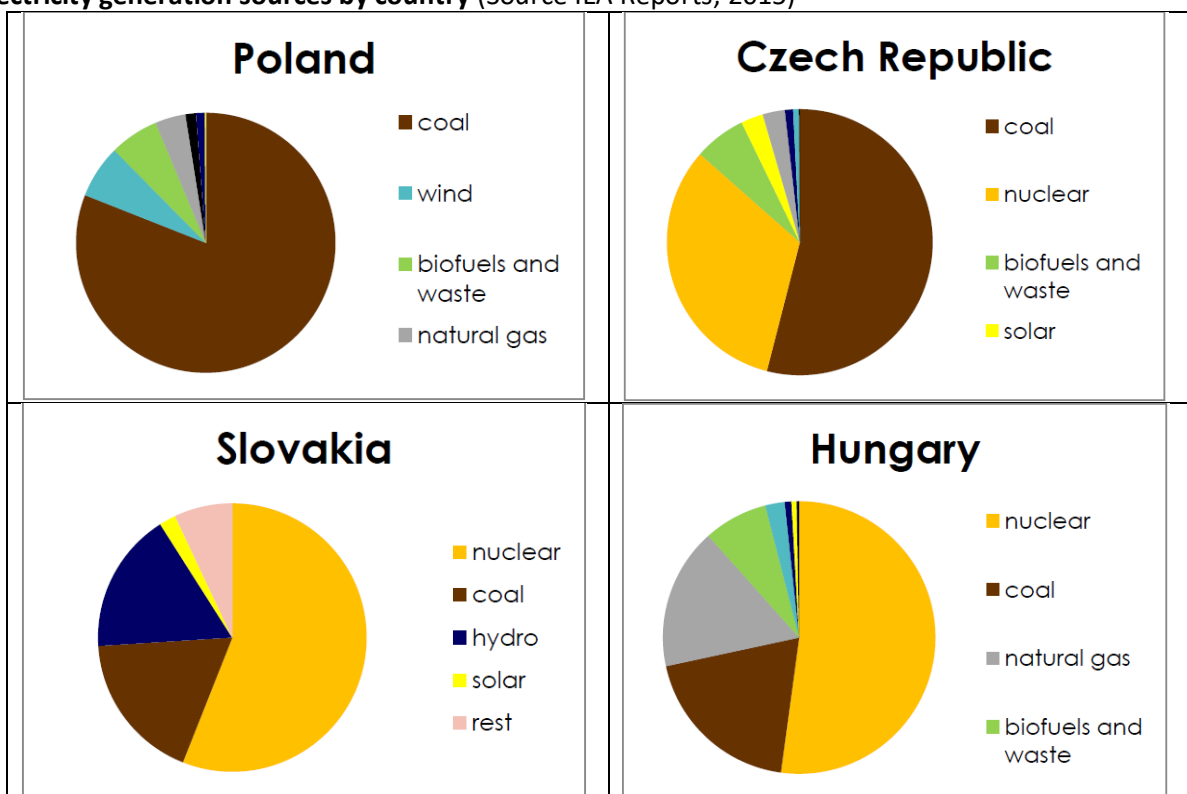
- The Visegrad countries – Poland, the Czech Republic, Slovakia and Hungary – share certain aspects in common when it comes to the use of renewable energy sources (RES), even though they differ in geography and economy.
- they all have joined the EU in 2004, *“they all count as **the post-communist states** and this heritage influences their present significantly.”*
- *“There is a big difference between an institutional “hardware”, which is to a considerable extent inherited from the state-socialist period, and cultural “software”, which is rather hybrid, i.e. based on the long-established traditions and the pressures of globalization and Europeanization of the 1990s.”*
 - strong tradition of big, state-owned energy companies
 - poor tradition of public consultation and deliberation
 - lack of the culture of dialogue [in shaping policies]
 - limited legitimacy for a plurality of competing interests
- the Visegrad Group struggles with the instable political fields that are unable to handle this issue = major challenge
- **the frequent changes in legislation** and the level of government support for RES are creating **instable investment environments** in the countries and are hampering their chances at a more widespread use of RES.

RES potential in V4

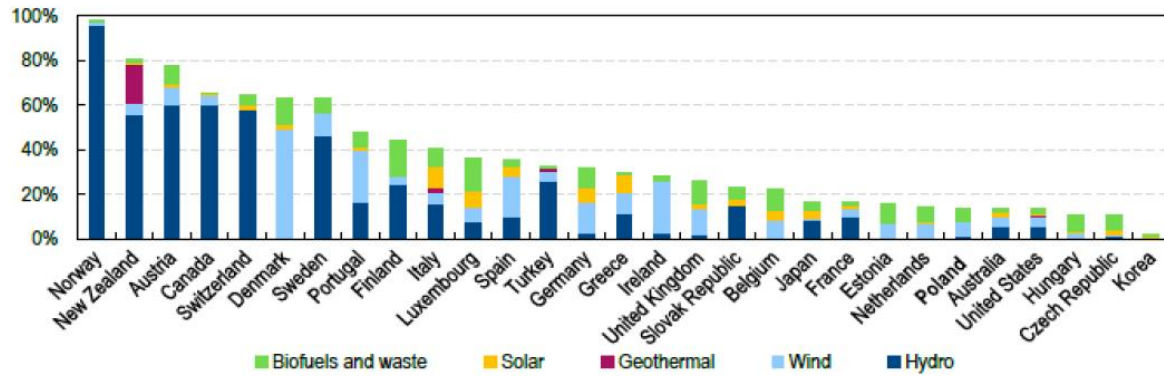
- **Poland**
 - big potential for onshore and also offshore wind
 - in 2015, Poland was 7th in the world in the new installed wind capacity and 12th in the overall installed capacity
 - the capacity increased by 550 % between years 2010 and 2015
 - the total share of RES in total primary energy sources was about 10% in 2015
- **Czech Republic**

- biomass is the only widely available RES
 - For the future there are plans for solar, geothermal energy and biomass to make use of the large forests and agricultural waste
 - there is also a potential for biomass from fast-growing crops
- **Slovakia**
 - has a large share of hydropower in energy mix (accounts for 17%)
 - This great deal of hydropower is used despite relatively few large-scale projects.
 - there is a small contribution of biomass
 - Until 2011, there was no role of solar energy but since mid-2011 it started to grow significantly.
 - There is also a plan for the development of wind power, even though biomass is still prioritised.
 - **Hungary**
 - very small penetration of RES.
 - biomass accounts for 6 % and wind for 3 % of electricity generation.

Electricity generation sources by country (Source IEA Reports, 2015)



Electricity generation from renewable sources as a percentage of all generation in IEA member countries (2015):



Note: Biofuels and waste may include shares of non-renewable waste.

Source: IEA (2016a), *Energy Balances of OECD Countries 2016*, www.iea.org/statistics/.

“Based on this data, one question becomes clear: Is the low penetration of RES in the V4 caused by limited natural conditions or is it partly due to the poor systems of support mechanisms?” [p.5]

POLAND

- Poland is struggling with the problem of **state-owned energy monopolies** which have a strong influence the shaping of energy policy (mainly coal, electricity, gas and oil sector).
- The biggest challenge remains **coal dependency**.
- The problem is that current government sees coal as national treasure allowing for its low import dependency; Poland indeed is one of the least energy dependent EU member states

CZECH REPUBLIC

- carbon intensity is also a significant problem => high emission numbers per capita
- Share of coal among electricity generation exceeds 50 % which makes it 4th highest number in the IEA countries (still behind Poland)
- since 2005 energy produced from coal has decreased and the position of coal should be gradually replaced, probably mainly by nuclear energy 😞

SLOVAKIA

- struggles mainly with its import dependence on primary energy sources which lies at approximately 90 %
- It is also the 5th most energy intensive country in the EU
- taxes on energy are significantly below the EU average
- market structure: little efforts at changing the electricity suppliers among the households (pricing of energy and abusive door-to-door business practices causes fading of the trade aspects from energy sector, p. 7)

HUNGARY

- main electricity generation from nuclear energy (more than ½ of the country’s generation depends on the single nuclear power plant)
- Similarly to Poland, there is a big problem of state-owned energy monopoly

- unclear strategy on the future power plants => uncertainty for potential investors

CZECH CASE: Changes in RES support scheme:

- the legislative changes ⇔ difficult predictability of the system
 - The original system of feed-in tariffs (FIT) and feed-in premiums (FIP) was replaced by the green bonuses system, the amount of the green bonuses is adjusted yearly for each RES.
 - a multiannual programme to support biofuels in the transport sector was introduced for 2015-2020, but then was abandoned already in 2015 with the restriction on the use of 1st generation of biofuels (agreed by the European Parliament) => CR faces a lack of 2nd and 3rd generation biofuels => difficult to reach the 10.8 % RES share target in the transport sector.
 - in 2010, a solar tax was introduced because of the so-called solar boom: a tax of 26 % (28 % for green bonuses) on solar PV installations (with the capacity >30 kWp, commissioned in 2009-2010); this was in force in 2011-2013, replaced by another in 2014 which reduced the tax to 10% (11% resp.) BUT applied only on solar plants commissioned in 2010.
 - Before 2014, 2/3 of subsidies for the RES went to solar, even though it makes only 5% of renewable energy => this together with falling technology prices motivated a new bill in 2013 which ended FITs (for new installations except of hydro)
 - **So there are no longer FITs for solar, wind and biomass.**
 - ***“These changes have had a very negative effect on the confidence in the government, whose unpredictability introduces uncertainty in the market.”***

Summing-up

- *“Adjustments of legislatures of RES are necessary, especially because of very rapid changes in this field (e.g. the fast drop in the prices of photovoltaic installations) but states should always avoid radical changes. They should involve possibility of moderate yearly support prices adjustment directly to the legislature and not to scare investors with often radical ad-hoc amendments.”*[p.9]
- *“The Visegrad Group foresees the future in a nuclear-coal-green scenario.”* [p.9]
- As their capacities in RES are so far limited, they do not seem likely to substantially reduce coal...

Selected news articles on Czech Renewables policies:

Czech President approves controversial solar tax

16. DECEMBER 2010 | JAROSLAV DORDA/SHAMSI AH ALI-OETTINGER

The Czech President Vaclav Klaus has approved a retroactive solar tax for solar power plants in the Czech Republic in spite of fears of possible arbitrages and protests by several members of European Photovoltaics Association (EPIA).

The new solar legislation will become fully effective from January 2011. It will be a really bad Christmas present to majority of solar investors in the Czech Republic. In fact the original FIT revenues generated by the investors will be largely and retroactively reduced. The investors who commissioned plants with an installed capacity over 30 kilowatts-peak in 2009 and 2010 will have to pay a retroactive solar tax. It will vary from 26 percent (FIT for sold power to grid operators) to 28 percent (so-called Green Bonus payments for electricity produced and consumed in the consumption place) and will be valid for three years (2011 – 2013).

The Czech president was aware of the fact that the solar tax would put the Czech Republic into troubles and risks related to solar arbitrages and legal disputes against the country. Just two weeks ago Klaus expressed his doubts in terms of the solar taxation. He was also worried that without the approval of the solar tax, the prices of electricity could be increased dramatically in 2011 for the final consumers.

For many Czech small and mid-sized investors it will have a detrimental effect on their solar investments. In many cases they will not be able to re-finance their loans. At the beginning of December 2010 (before Klaus 's decision on the solar tax), members of the European Photovoltaics Industry Association (EPIA) protested against the solar tax to be introduced in the Czech Republic. EPIA has already refused the Czech Government's actions, stressing the retroactivity fundamentally changes the conditions guaranteed to the operators of solar power plants already on the grid in 2009 and 2010.

However, the letter of EPIA had no impact on Czech officials and politicians. The speaker of MPO (Ministry of Industry and Trade) responded to EPIA's letter claiming that they had to take such action in order to prevent electricity prices from rising next year, as a result of the solar boom. According to him, such legislative measures are in the public interest (protection against hook in the electricity prices) that has to be preferred (damaged solar investments).

Nevertheless, the reality is different as without any government intervention, the electricity prices would go up only by three to six percent, as a result of the solar boom. Based on the new price lists issued by the energy distribution companies E.ON and CEZ which have decreased the prices from 2011 so that the impact of PV is negligible (minor one). These companies have waged an intensive media campaign since February 2010 with a clear objective to scare the Czech public (deliberately to change their view) that prices will be increased by well over 20 percent only because of PV." By doing so, they have created a new "PV ghost" which is to blame for high prices of electricity.

It is strange that in 2006-2008 (where there were almost no PV plants in the country) the prices of electricity for households went up by 30%. Surprisingly nobody from Czech politicians or officials was looking for a solution for such dramatic price increase. Apparently, it was "also" against the public interest, but politicians were absolutely silent and neglected that. The reason is that it was in the interest of the state-owned utility CEZ – monopoly producer of electricity in the country.

Many investors hope the European Commission will soon intervene against such actions of the Czech government against photovoltaics. This is their last chance that Czech politicians will change their opinion. Without the EU intervention, Czech Republic will be facing the biggest number of international arbitrages resulting in the loss of rating.

The odds are high that lawyers will be very successful in the arbitrages since the new solar tax legislation is not in keeping with both EU and Czech Republic's legislation. The oncoming „solar arbitrages“ look like a „time bomb“ which is ticking right now and is ready to explode at the beginning of 2011. The results of the arbitrages will impair the credibility of the Czech Republic (a decrease of its rating and amount of foreign direct investments) in the near future. Well, it seems to be a bitter consequence of the Czech Republic's solar boom in recent years.

Government extends controversial solar tax

26-07-2013 21:30 | Jan Richter

The Czech government has extended the so-called solar tax, introduced in 2010 to balance high buying price of photovoltaic electricity. The 26-percent tax was to end at the end of the year; however, the government decided to extend it for years to come, lowering it to 10 percent. The decision has drawn criticism from owners of photovoltaic plants who say a series of government measures aimed at driving down the costs of solar electricity has greatly diminished the profitability of the industry.

The age of Czech solar power: after years of stagnation, is a rebirth imminent?

by Energiewende Team, **20 Mar 2019**

No other energy resource in the Czech Republic has been as discussed in the media and political debate as solar has been in recent years. The technology entered the Czech energy sector in 2010 with a big initial bounce, but its development stagnated during the next decade. Those interested in Czech photovoltaic technology are now attempting to revive it, says Martin Sedlák.

Within the economic potential, the installed capacity of solar plants could increase up to 3,5 GW in 2030.

Czech photovoltaic cells – a wild history

Over the past decade, ministers of industry in the Czech Republic have alleged that solar has no potential and is expensive. However, a wave of interest in solar did come to the Czech Republic from the dynamic global developments in this unique technology – and the Czech system was not prepared. The first wave in 2009 sparked solar growth and was followed by exponentially increased growth in 2010. The Czech Republic suddenly had almost 2 000 MW of solar capacity installed.

This jump-start of growth was also projected into the cost of electricity, given that consumers in particular were paying for state support of solar. The problem was not how the amount of such support was set up. However, the Czech Republic had no aims for how many new renewable projects should be brought online per year.

Unfortunately, solar park owners became labeled as the culprits, and politicians began using the derogatory label “solar barons” for them in the media. Today this shorthand is exploited mainly by Czech President Miloš Zeman, but in the past it was also commonly part of statements made, for example, by the chair of the Energy Regulatory Authority. The main problem was, however, a mistake made by the regulation. However, nobody was looking for it there.

As a corrective measure, the previous administration pushed through a special solar charge, the so-called solar tax of 26 % imposed on installations dating from 2009 and 2010. The charge was to have applied for three years, during which project owners lost part of their state support. The charge was then extended for solar parks dating from 2010, set at 10 % for as long as they drew on state support.

Solar owners believed the measure was not just retroactive, but contradicted the aim of increasing renewables. However, their lawsuit failed before the Constitutional Court. Several international arbitrations are still underway.

The impact of these moves on solar has been merciless: Since 2011, no big solar projects have been implemented in the Czech Republic. What is annually growing is rooftop solar, with a capacity of 6 MW to date.

Support for small installations

2018 appears to have been slight promising: Rooftop solar growth has doubled year-on-year. During the first 11 months of 2018 there have been more than 1 500 applications for support paid out with a capacity of 6 MW.

From the perspective of new project growth in other European countries, the Czech example appears embarrassingly small. Nevertheless, domestically it appears to be a success after the years of decline. Firms performing installations now enjoy a predictable, stable environment. They are able to offer solar solutions for heating water, either alone or in combination with batteries or heat pumps. Families are able to request support for installations, depending on the type of system, that ranges from CZK 30 000 to CZK 150 000 (EUR 1 150 – 5 770) from the New Green Savings program.

Bigger projects of up to 1 MW of capacity can also be commercially implemented. The Czech Industry and Trade Ministry has already issued two calls through which firms can request investment into photovoltaic electricity generators. However, the condition is that the power generated be used directly on the firm’s own premises and that the equipment be installed on that particular building. During 2018 several projects on the order of hundreds of kilowatts have been built. Unfortunately, no other call has been announced and the companies are thus postponing their investments into renewables.

Opportunities for Czech solar have exponentially increased

The solar energy association has presented a study mapping the potential for solar in the Czech Republic. From its calculations, contributed by the renowned consultancy EGÚ Brno, it follows that there is technical potential for as much as 39 GW of solar. This includes opportunities to install panels on facades and rooftops as well as the building of photovoltaic electricity generation projects in brownfields. In total, this could mean up to 2,2 million solar systems (<10 kW) on rooftops and thousands of bigger installations

Within the economic (i.e. feasible) potential, the installed capacity of solar plants could increase up to 3,5 GW in 2030 and 5,5 GW in 2040.

For the repeated startup of such constructions, however, bigger solar projects in the Czech Republic lack two basic things: Good laws and political support. The Czech Industry and Trade Ministry is currently drafting an amendment to the law on state-supported energy. After about a year of debate with experts, a bill has been drafted to introduce auctions for new renewable projects, inspired by a German law which began a very interesting reduction to the costs of new projects there, especially for photovoltaic parks. However, the Czech Industry and Trade Ministry bill does not count on auction opportunities for new solar parks.

According to associations of modern energy professionals, the Czech ministry's move makes no sense. In the associations' view, the law should be neutral with respect to technology. Moreover, it is exactly solar that has the greatest chance of offering consumers cheap electricity, which would be advantageous.

The same ministry is pushing the Czech Government to support new nuclear reactors, which are exponentially less advantageous than solar for consumers.

Unfortunately, chances to build new solar parks, whether located in brownfields or on the grounds of spacious industrial campuses, are also not part of the Czech climate-energy plan the Government is meant to send to the European Commission by the end of the year to present its strategy for fulfilling its emissions-reduction obligations by 2030. According to the versions of the plan that have leaked to date, the Industry Ministry only wants to support solar projects with a capacity of 30 kilowatts or less.

Despite these small steps forward, the Czech solar energy sector is still waiting for somebody with a clear political vision to arrive on the scene. For the time being the Industry Minister, Marta Nováková, unfortunately remains behind the current energy trends.

Martin Sedlák is program director of The Modern Energy Union (Svaz moderní energetiky), the Union contributes to national debates in Czech Republic. He is as well an author for the Blog Aktuálně.cz, by Energiewende Team. The "Energiewende Team" has an administrative function. We use this account to repost all the best articles about the global Energiewende from around the web. <https://energytransition.org/2019/03/czech-solar-power-after-years-of-stagnation/>

Poland and the Czech Republic: How to “Renewable” the Energy Mix?

Autor: Adéla Denková a Karolina Zbytniewska | [EURACTIV.cz](https://euractiv.cz) a [EURACTIV.pl](https://euractiv.pl)

Oct 11, 2018



This article is part of the report: [Czech-Polish visions on the future of the EU](#)

In both Poland and the Czech Republic, coal is the main pillar of power generation. For Poland, it stands behind around 80% power generation. In the Czech Republic, coal's share in the energy mix is twice lower due to the rising role of nuclear energy.

Both countries have been also observing a decline in the share of coal in favour of gas and renewable energy sources (RES). This, to a small extent, is associated with a decrease in greenhouse gas emissions – good news especially to Polish citizens, as according to the infamous WHO pollution list 36 of the 50 most polluted European cities are in Poland.

Poland: No energy strategy, just an ad hoc mode

Poland's energy mix is dominated by coal. Poland has the least diversified energy mix in the whole EU. All Polish governments after the democratic transition as of 1989 has been defending coal's role in the Polish economy, including the present one. Only a year ago Polish energy minister **Krzysztof Tchórzewski** said that not only Poland will not resign from coal but also that it's share in the 2050 energy mix might be as high as 50%.

However, Polish coal is uncompetitive compared to imports from outside Europe. Thus, the volume of imports is rising. And especially from Russia. It pays, as even when transport cost is counted, Russian coal is around 20% cheaper than the local. And of a better quality. This situation is geopolitically ambiguous, taking into account Polish strong voice in favour of EU's energy independence from Russia, especially in the context of Nord Stream 2.

Additionally, today almost 60% of Polish energy infrastructure is over 30 years old. Considering the plans to reduce emissions included in the Paris Agreement and the EU energy and climate strategy, half of them should be closed by 2035. Some experts still consider clean coal technologies, however, to apply them we still need to have coal first, which – as above – comes in rising volumes from abroad, not from Polish national mines. So, it's actually contrary to the political narrative on basing Poland's energy safety on our national treasure – coal.

„One should strive to reduce its GHG emissivity by developing less emission-producing sources: gas and renewable (RES) with the obligation to ensure stable supplies at the base. This means that one hundred percent of RES should not become a target,” said **Wojciech Jakóbiak** from BiznesAlert.pl.

“If Poland doesn't diversify its energy mix until 2050 we will only reduce our CO2 emissions by 7%. In the diversified scenario, we will cut our CO2 by around 62% and in the RES scenario about 80%. So, it is important for our membership of the EU but also because of other reasons to diversify our power mix,” added **Joanna Maćkowiak-Pandera** from the energy-focused Polish think tank Forum Energii.

Despite government's declarative attachment to coal, in fact its extraction has been reduced systemically for years – and this process continues. And it will continue further, in favour of natural gas, RES, and who knows – maybe nuclear energy.

This “who knows” part is a clue to the major problem of the Polish energy strategy, i.e. for its lack. Poland has been in an ad hoc mode for years now justifying it with the unexpectedness of the global energy market, swift technological development and external requirements like the international climate agreements powered in a large scale by EU ambitions for reducing emissions of greenhouse gases, increasing EU's competitiveness on the global energy market, and – at least on the declarative level – increasing energy safety and independence.

Polish government has been struggling with creating the energy strategy for several years now – to no end. The nuclear power as its key element has been a recurrent leitmotif tested in public announcements. However, it would be a challenge because of the far-reaching timeframe for construction, costs and the source (source country) of technology. On the other hand, whatever will be decided will require costly investments and so far still foreign technological input.

According to the Energy Ministry and government's declarations, this strategy should be finished by the end of this year. Creating it is of the utmost importance, as only knowing a clear vision energy companies will be able to plan investments in Poland. Without it also it will be difficult to assess the success of Poland as of the host country for this year's international climate summit COP24. Furthermore, any strategy plan for 2030, „will strengthen the debate and make Poland focus on that goal. And, finally, a planned and organised energy transformation costs less than uncoordinated modernisation,” noted Joanna Maćkowiak-Pandera.

The Czech Republic: Nuclear rise

Lignite is the main pillar of power generation in the Czech Republic. Last year, around 42% of electricity was produced in brown coal-fired installations. This should change in the future. Due to exhaustion of coal reserves, mining limits and environmental regulations, the sector will see a gradual decline in the upcoming three decades.

Nuclear power should be the choice for the future. At least according to the State Energy Policy, the main strategic document which outlines the development until 2040. By that year, nuclear power plants should produce at least 46% and up to 58% of electricity. Construction of new nuclear blocs is therefore crucial, as the existing units do not have sufficient capacity. At the moment, nuclear stands for 33% of power generation.

By 2035, one new nuclear reactor should be built in the location Dukovany, and up to three new blocs should follow later. But the decision-making process on how projects will be financed is falling behind schedule. Results of the governments' deliberation should have been announced in spring 2018, but it is now expected that it will only happen at the end of the year. Until then, a public tender for the selection of technology supplier cannot be launched.

"Czech authorities may even come to a decision that in a second round, they will not opt for a public tender. In such case, the "Finnish" way [investment by a consortium of energy and industrial companies] is not realistic. But a "Hungarian" scenario could be viable," energy security analyst **Tomáš Vlček** from the Masaryk University in Brno told EURACTIV.

Indeed, the possibility to build the new bloc under an intergovernmental agreement with a selected partner has become one of the options often mentioned in the political debate. It seems to be mainly promoted by those who support the idea that Russian Rosatom should be chosen as the technology supplier. Whether such scenario would also solve the issue of financing (Hungarian project Paks II should be financed through a loan from the Russian state), remains a question.

If the strategy based on nuclear energy fails in the Czech Republic, the focus could shift towards natural gas. This source raises concerns in terms of energy security, as it would mean higher reliance on external natural gas resource. The Czech Republic practically does not produce its own gas and is completely dependent on supplies of Russian gas.

On the other hand, the country is well connected to the western markets (practically all of the gas comes through the western route) and the ongoing liberalisation of the EU market plus the development of the global LNG market gives good hopes for the future. The Czech Republic is also an important transit country which secures its position in terms of energy security.

Nord Stream 2

It is also one of the reasons why the Czech government remains neutral towards Nord Stream 2. "The project is not problematic for the Czech Republic, as the position of a transit country will be preserved and maybe even strengthened," **Martin Jirušek**, Vlček's colleague from the Masaryk University explains. So, on that the views of the two analysed countries – Poland and Czechia – are contrary.

Poland is against the construction of the Nord Stream 2 gas pipeline and treats this project as a political venture, unlike Russia and Germany that declare that the gas pipeline is just pure business. When critical infrastructure, strategic energy source and general EU-Russian relations are taken into account it is however difficult to turn a blind eye to the political dimension of the project.

Poland demands that the gas pipeline project is fully in line with the EU law. „We can say that we have a lot of support from many countries, not only being convinced by our arguments, but that also see harmful intentions for European solidarity on the part of the gas pipeline and diplomacy around it,“ said Poland's Deputy Energy Minister **Michał Kurtyka** recently.

Still, the utilisation of natural gas is perceived as expensive (due to the fuel costs), and does not comply with the EU efforts to reduce greenhouse gas emissions and air pollution, **Pavel Farkač** from the Confederation of Industry of the Czech Republic says.

Outlook for the future

"We see the combination of nuclear and renewable sources with a balancing role of fossil fuels in a limited scope as the optimal electricity mix," Farkač told EURACTIV.

Some stakeholders and experts believe that the renewable sources could play a more important role, but the official policy of both countries remains conservative – what is pointed out is a relatively low exposure to the sunlight and insecurity of supply.

Still the share of renewables will have to correspond to European policy. The 27% of RES in gross final energy consumption by 2030 was originally proposed by the European Commission. However, the Council of the EU and the European Parliament reached an agreement in June 2018 on an EU-wide renewable energy target of 32%. In 2016, the share of renewables amounted to approximately 15% in Czechia and 13,5% in Poland (c. 70% from biomass). Until the end of this year, all EU member states should draft their national plans for meeting the EU climate goals.

Whatever they are, it is also vital for the EU to ensure that the post-2020 Multiannual Financial Framework supports all European countries in delivering decarbonised economy and just energy transition.

<https://euractiv.cz/section/all/news/poland-and-the-czech-republic-how-to-renewable-the-energy-mix/>