

# EU MONITOR

## Czech Republic vis-à-vis climate change: critical dilemmas ahead?

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- **Climate change demands action from all actors on the international forum. The collective action problem, thus far, has been hard to overcome, with countries like the US or Russia failing to hold up the targets demanded by the Paris Agreement. Nevertheless, the EU has responded to an apparent stalemate on the international level and adopted a lead-by-example strategy, implementing environmentally friendly policies such as regulations to improve energy and water efficiency of buildings, including environmental demands in trade cooperation or affirming strict environmental goals among the priorities of the newly-elected parliament.**



## České vize pro Evropu, evropské vize pro Česko Czech Visions for Europe, European Visions for the Czechs

The overarching guiding principle that was to be agreed among member states on 20<sup>th</sup> June 2019 in Brussels was the EU 2050 carbon neutrality target. Poland, Czech Republic, Hungary, and Estonia, however, prevented the EU<sup>2</sup> from adopting the long-term climate neutrality goal at the summit. The reluctance of some heavy-emitting member states has been expected. One month later, the Czech Prime Minister Babiš re-evaluated<sup>3</sup> the country's position and claimed that the Czech Republic might support the 2050 carbon neutrality goal, which should be back on the agenda at the next Council meeting in December 2019<sup>4</sup>, but only if the target will not put Czech economy and employment in danger.

Given the urgency of climate change, as well as the recent rollercoaster of national stances towards the issue, it might be useful to observe the Czech Republic vis-à-vis the climate challenge. The aim of this paper is to explore where the key dilemmas lay and what trade-offs need to be made.

### Impacts of climate change on the Czech Republic

The most recent analysis about impacts of climate change on the Czech Republic was issued by The Ministry of the Environment of the Czech Republic in 2017.<sup>5</sup> The document confirms the trend of gradual rise in average annual temperature amounting to approximately 0.2°C over 10 years. The estimations of the future predict that by 2030 the average annual temperature should rise by 1°C. It may seem imperceptible, but it is around 13 % increase from the

current average temperature of 7.7°C. If the estimate holds, in 20 years, the average climate in the Czech Republic will be as hot as it was in the popular holiday destination during the socialist times – Romania.<sup>6</sup>

Nevertheless, the average temperature is not the best measure of extreme temperatures, which will cause far larger problems as climate change advances. For that, the number of tropical days above 35°C is used. The meteorological station Brno-Židenice measured 6 extreme days in Czechia in 2018.<sup>7</sup> The station Praha-Libuš recorder 5 of them.<sup>8</sup> This is comparable to the average climate in Costa Rica (6 days) or Uruguay (5 days) between 1986 and 2005.<sup>9</sup> The measurements indicate that the climate has changed in the Czech Republic. This change is not positive, and the response has been costly for the country.

Climate change is often associated with increased temperatures, but the main danger for Czech citizens comes from extreme meteorological events that result from increased temperature of the regional atmospheric realities, as is recognized in the various documents by the Ministry of the Environment including the key document, the state Adaptation Strategy.<sup>10</sup> It is anticipated that the intensity and frequency of extreme heat, wind, precipitation as well as long-term droughts, large-scale flooding, landslides, rock formation collapses, and large-scale forest fires will rise.

Among the extreme events already observed by Czech citizens are the heatwaves. While heatwaves had been rare in Europe before, they now occur on a rather frequent basis. Deadly heatwaves now caused more fatalities (upwards

<sup>1</sup> Free trade agreement EU-MERCOSUR: Essence, challenges and expectations, EUROPEUM Institute of European Policy, 31.7.2019, Available at: <https://bit.ly/2mEd7vM>

<sup>2</sup> EU leaders to back carbon neutrality 'by 2050', come up short on final deal, EURACTIVE.com, 20.6.2019, Available at: <https://bit.ly/2ndaIbO>

<sup>3</sup> Babiš changes his attitude towards climate neutrality. 'It will cost us billions,' he said in Brussels, iRozhlas, 30.7.2019, Available at: <https://bit.ly/2l4EYOU>

<sup>4</sup> Four states block EU 2050 carbon neutral target, EU Observer, 20.6.2019, Available at: <https://euobserver.com/environment/145227>

<sup>5</sup> Seventh National Communication of the Czech Republic Under the United Nations Framework Convention on Climate Change, Ministry of the Environment of the Czech Republic, 2017, Available at: <https://bit.ly/2nbkUS1>

<sup>6</sup> The Romanian agrometeorological services and products – current status and challenges in the context of climate change, National Meteorological Administration of Romania, 2016, Available at: <https://bit.ly/2neYa3P>

<sup>7</sup> Meteorological records - year 2018, Meteorological station Brno-Židenice, 2019, Available at: <http://www.meteo.jankovic.cz/zaznamy/rok-2018/>

<sup>8</sup> Historical Data, Czech Hydrometeorological Institute, 2019, Available at: <http://portal.chmi.cz/historicka-data/pocasi/denni-data#>

<sup>9</sup> Climate Impact Map, Climate Impact Lab, 2019, Available at: <https://bit.ly/2mBBY3w>

<sup>10</sup> Strategy on Adaptation to Climate Change in the Czech Republic – Executive Summary, Ministry of the Environment of the Czech Republic, 2015, Available at: <https://bit.ly/2mHSejc>

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from 2500 over the course of the last three summers) in the UK than storms, which has resulted in proposals to start naming the heatwaves.<sup>11</sup> The 2003 European heat wave caused about 77,000 fatalities.<sup>12</sup> That death toll is comparable to the deadliest volcano eruption of Mount Tambora in 1815 or about 2 times the number of fatalities of the Invasion to Iraq [at the beginning of the century](#).

In the Czech Republic, the first heatwave fatality was recorded in 2006.<sup>13</sup> Heatstroke treatment costs amounted to 1.8 million crowns last year as reported by the National Health Insurance company.<sup>14</sup> Impacts of heatwaves have also influenced the animals. Last year, 30 thousand chickens died because of the heat; this year's numbers are upwards of 25 [thousand](#).<sup>15</sup> Furthermore, the heat is harming the infrastructure, where high temperatures degrade the quality of roads<sup>16</sup>, and also impact the railway tracks, which resulted in delays throughout the country in 2015.<sup>17</sup>

However, one of the most pronounced risks for forestry, agriculture and people's daily lives are droughts. Of the past 10 years, the prolonged period of drought occurred in 5 of them.<sup>18</sup> The 2018 extreme drought has

caused damage to crops of up to CZK 12 billion.<sup>19</sup> The occurrence of wildfires grew up to 5 times in 2018 and the number could have been even higher if the weather had not been comparably less windy that year.<sup>18</sup>

People in over 60 municipalities faced water shortages [and had their water usage limited to 100 litres a day](#).<sup>20</sup> Once again, this may seem unobservable given that Czechs use on average 89 litres of drinking water per day (this is the average water consumption by Czech households, excluding firms).<sup>21</sup> The peculiarity lies in the different water consumption during the hot days, when the limits put a strain on the citizens.

The higher temperature is associated with increased water consumption.<sup>22</sup> A regular Czech summer has 44 days above 25°C<sup>23</sup>. The increased consumption in hot days can be caused, among many things, by more urgent need for a daily shower. It can be assumed that a regular Czech wants to shower daily during the summer. The modern shower heads use no more than 8 litres per minute.<sup>24</sup> If Czech citizens take a 9-minute shower (below the average across some countries<sup>25</sup> and above the Netherlands<sup>26</sup>), they use 72 of the 100-litre allowance. A washing machine takes about

<sup>11</sup> Is it time to start naming deadly heatwaves?, Grantham Research Institute on Climate Change and the Environment, 23.7.2019, Available at: <https://bit.ly/2mIuZWg>

<sup>12</sup> European Heat Wave 2003, Climate Signals, 4.12.2018, Available at: <https://www.climatesignals.org/events/european-heat-wave-2003>

<sup>13</sup> Heat wave claims first fatality, Radio Prague International, 15.6.2006, Available at: <https://www.radio.cz/en/section/news/heat-wave-claims-first-fatality>

<sup>14</sup> The heat wave crushes Europe. Extreme weather has its first victims, E15.cz, 26.6.2019, Available at: <https://www.e15.cz/zahranicni/vlna-veder-drti-evropu-extremni-pocasi-ma-prvni-obeti-1360165>

<sup>15</sup> The heat kills poultry by the thousands. Breeders blindly believe in unreliable air conditioners, Aktualně.cz, 26.7.2019, Available at: <https://bit.ly/2lGjDSw>

<sup>16</sup> The heat and trucks are destroying the older county asphalt roads. According to the regions, the problem is in poor quality asphalt, Aktualně.cz, 10.8.2018, Available at: <https://bit.ly/2n8R00F>

<sup>17</sup> The heat can deform the rails, so the trains slow down preventively, Aktualně.cz, 5.7.2015, Available at: <https://bit.ly/2na6Bx2>

<sup>18</sup> Extreme Drought of 2018 in the Czech Republic, EGU General Assembly, 2019, Available at: <https://bit.ly/2l8G6aP>

<sup>19</sup> Czech Republic Experiences One of the Worst Droughts in its Recent History, Brno Daily, 27.10.2018, Available at: <https://bit.ly/2mIUOPa>

<sup>20</sup> Increasing number of municipalities limit tap water use, Radio Prague International, 16.8.2018, Available at: <https://bit.ly/2l5SQPK>

<sup>21</sup> Czechs in households consume more than 89 litres of drinking water daily, Czech Statistical Office, 2.5.2019, Available at: <https://bit.ly/2lxLYL0>

<sup>22</sup> Chang, Heejun; Praskievicz, Sarah; and Parandvash, Hossein (2014) "Sensitivity of Urban Water Consumption to Weather and Climate Variability at Multiple Temporal Scales: The Case of Portland, Oregon," International Journal of Geospatial and Environmental Research: Vol. 1 : No. 1 , Article 7. Available at: <https://dc.uwm.edu/ijger/vol1/iss1/7>

<sup>23</sup> Seventh National Communication of the Czech Republic Under the United Nations Framework Convention on Climate Change, Ministry of the Environment of the Czech Republic, 2017, Available at: <https://bit.ly/2nbkUS1>

<sup>24</sup> Why do we need Water Efficient Showers and Showerheads?, savewatersavemoney, Available at: <https://bit.ly/2neDj0n>

<sup>25</sup> When the World Washes, Kantar Worldpanel, 2015, Available at: <https://bit.ly/2yrGjgk>

<sup>26</sup> Average time spent in the shower in the Netherlands from 1992 to 2016 (in minutes), Statista, 2019, Available at: <https://bit.ly/2mJlXZ4>

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50 litres per wash.<sup>27</sup> Washing clothes once a week takes around 7 litres a day, leaving 20 litres per day. Going to the toilet 2 times a day, using most efficient toilets<sup>28</sup> takes additional 10 litres. Cooking averages at 8 litres per person<sup>29</sup> and the summer caps leave citizens with 2 litres for brushing teeth twice a day or washing hands (which typically takes 5 litres<sup>30</sup>), washing the dishes by hand taking 12-15 litres per wash and all the possible use of water for the plants in the garden. Thus, the 100 litres a day cap during the days when citizens use water the most will put pressure on the daily routine of Czech citizens and possibly require some sacrifices.<sup>31</sup>

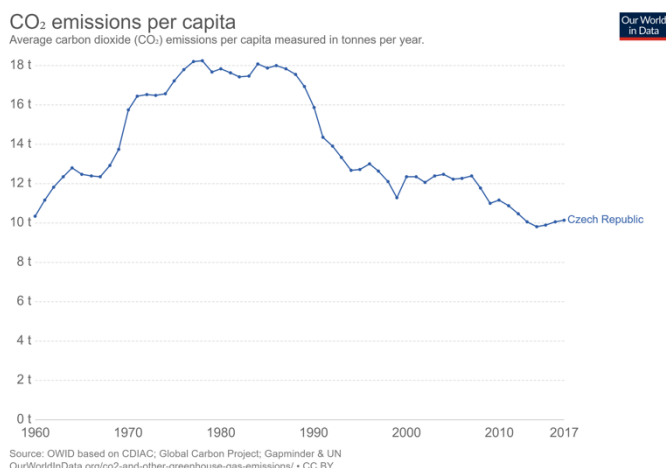
Furthermore, it is not only those 60 municipalities that can be in danger. In the early July 2019, more than half of the Czech Republic was hit by exceptional or extreme drought. According to the project InterSucho, which is mapping the current state of drought in the Czech Republic, some 63 percent of the country's territory was affected, including the whole of Bohemia and northeast Moravia.<sup>32</sup> Responding to the crisis, Czechs started digging their own wells.<sup>33</sup>

From the government's side, the combined investments of the Ministry of the Environment and the Ministry of Agriculture to fight droughts since 2014 have amounted to 39 billion crowns.<sup>34</sup> For this money, the Czech Police could operate for a whole year.<sup>35</sup> Moreover, studies confirm that the occurrence of droughts will be more frequent.<sup>36</sup> In the medium term, it can be expected that the average flow rates will decrease in many river basins by 15

– 20 % ("optimistic" scenario) to 25 – 40 % ("pessimistic" scenario), which would lead to fundamental changes in the overall hydrological regime<sup>37</sup>.

## Czech Contribution to Climate Change

Climate change is already affecting citizens' lives. How can, then, the country contribute to better environment and climate and possibly soften the adverse effects of the seemingly wide-spread ecological ignorance? The provenience of Czech emissions showcases where trade-offs need to be made.



Source: Our World in Data, Available at: <https://bit.ly/2ObUFnJ>

<sup>27</sup> Samsung claims this being from 39 to 53 litres per wash (Available here: <https://bit.ly/2lVKhGI>), Home Water Works, a project for water efficiency, claims that most high-efficient washers use 56.8 to 113.6 litres per was (Available here: <https://bit.ly/2DBje91>) For simplicity, I allow a optimistic scenario with 50 litres usage

<sup>28</sup> Europe looks to make a big splash with toilet reform, Quartz, 29.10.2013, Available at: <https://bit.ly/2l7je1J>

<sup>29</sup> How much water do you use?, Ruapehu District Council, Available at: <https://bit.ly/2n0TAGg>

<sup>30</sup> SEE: How much water do you use per day?, health24, 7.2.2018, Available at: <https://bit.ly/2BMLh5A>

<sup>31</sup> The estimates differ by culture, society or country. Since this is only a thought experiment that serves illustrative purposes, I stick with various sources. The wide variation should be accounted for in order to make a precise estimate, which was not the goal of this paragraph at this stage.

<sup>32</sup> Measures Taken as Over 60 Percent of Czech Republic Hit by Extreme Drought, Radio Prague International, 9.7.2019, Available at: <https://bit.ly/2lz62N7>

<sup>33</sup> More Czechs Digging Their Own Wells, Radio Prague International, 14.7.2019, Available at: <https://bit.ly/2l2Ta1c>

<sup>34</sup> Czech Republic : At the Office of the Government, the National Coalition for Drought Collision met for the second time, Market Watch, 7.2.2019, Available at: <https://on.mktw.net/2n8MfEm>

<sup>35</sup> Czech police budget to rise by CZK 20.8 million, Prague Daily Monitor, 15.2.2018, Available at: <https://bit.ly/2lziTmA>

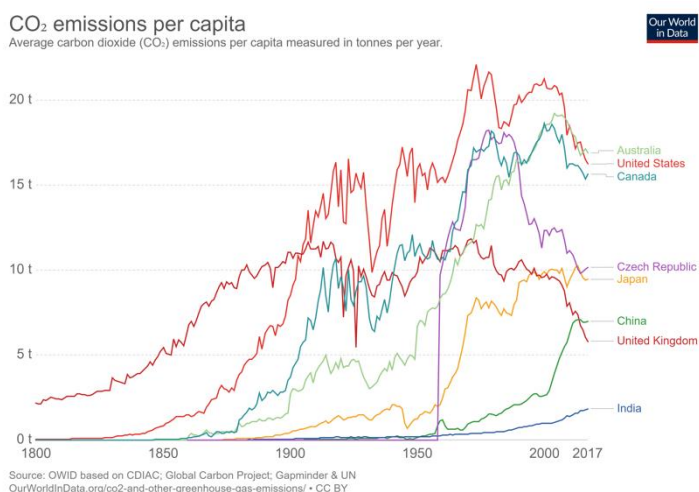
<sup>36</sup> Droughts Czech Republic, Climate Change Post, 2019, Available at: <https://bit.ly/2lbU37U>

<sup>37</sup> Seventh National Communication of the Czech Republic Under the United Nations Framework Convention on Climate Change, Ministry of the Environment of the Czech Republic, 2017, Available at: <https://bit.ly/2nbkUS1>



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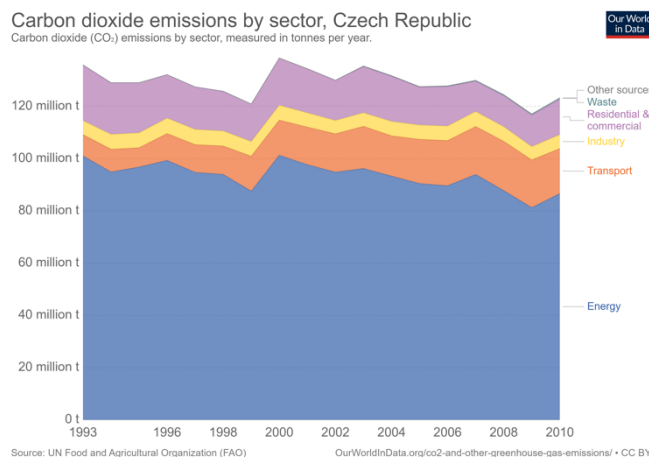
The first glance of the Czech emissions<sup>38</sup> per capita development over time seems positive. The national emissions have been decreasing for some 30 years now, growing by narrow margins only for the last four years recorded. This, however, is only the first impression. The problem lies in the fact that due to the heavy industry focus of the Czech economy, the emissions were disproportionately high prior to the significant drop in the early 1990s. At 18 tonnes per capita, Czech Republic was the 8<sup>th</sup> largest polluter in the world, relative to the population, measuring the emissions produced within the national borders. In absolute terms, it is more than countries such as Brazil, Argentina or Switzerland. Czech emissions accounted for more than the emissions of the bottom 60 % of the countries combined.



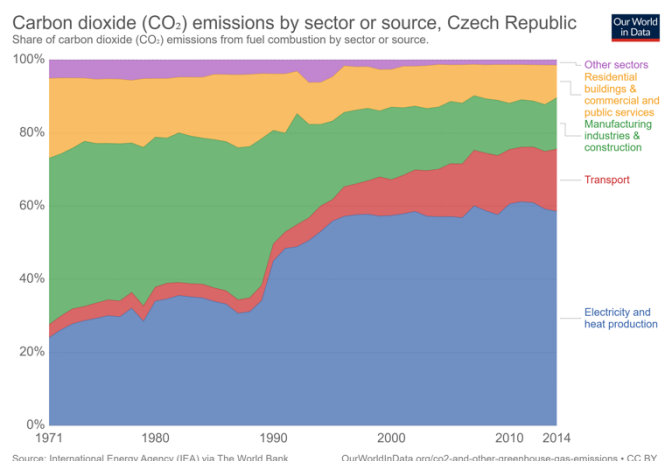
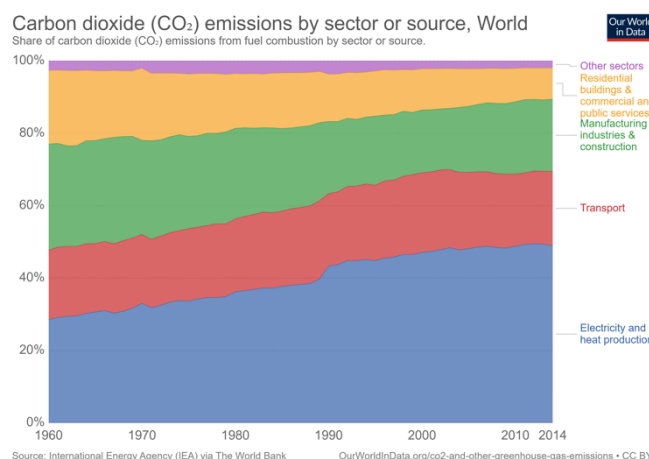
Source: Our World in Data, Available at: <https://bit.ly/2ObUFnj>

The present situation, however, is not much brighter. In 2017, the EU-26 average CO<sub>2</sub> per capita was 8.8 tonnes.<sup>39</sup> The Czech carbon footprint was 12.3 tonnes. The Czech Republic is currently the 5<sup>th</sup> largest per capita polluter in the EU and 22<sup>nd</sup> largest in the world.

<sup>38</sup> CO<sub>2</sub> emissions per capita, Our World in Data, Available at: <https://bit.ly/2ObUFnj>



Source: Our World in Data, Available at: <https://bit.ly/2ImPEPg>



Source: Our World in Data, Available at: <https://bit.ly/2ISHbUE>

<sup>39</sup> Greenhouse gas emissions per capita, Eurostat, 2019, Available at: <https://bit.ly/2I7yJ3n>

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Greenhouse gas pollution in the Czech Republic comes mainly from energy, transport and manufacturing. As the history of the emissions graph indicates, the absolute amount of emissions decreased from the early 1990s in all sectors, except for transport. These decreases resulted from the use of technologies that are less energy intensive, heat insulation of buildings and savings achieved by households. The Czech Republic, however, remains one of the countries with the highest energy intensity per GDP unit in international comparison.

The increase of total emissions caused by transportation can be attributed to individual automobile transportation. This recorded a steady increase in passenger transport, from 58 % in 1990 to 71 % in 2015. In 1990, transportation-generated emissions amounted to mere 6.1 % of the total CO<sub>2</sub> emissions in the Czech Republic. In 2009, this value rose to 17.7 % and the maximum value was reached in 2014 – 18 %. The amount of emissions from transport decreased between years 2009-2013, but only due to the economic crisis and reduction in fuel consumption.

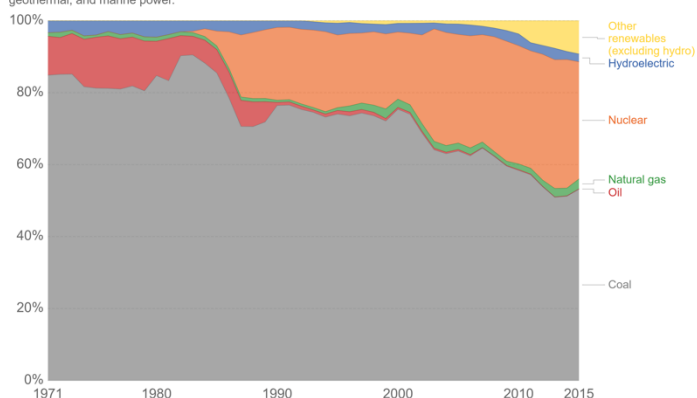
The bulk of Czech emissions lies in the energy generation sector, which is responsible for almost 60 % of all Czech emissions. The Czech Republic generates electricity mainly in coal-fired power plants, which generated 53.4 % of electricity in 2015. Another significant source of electricity are nuclear power plants Dukovany and Temelín, which accounted for 32.0 % of all electricity generated in 2015.<sup>40</sup>

Using coal for energy generation creates the most CO<sub>2</sub> emissions of all fossil fuels per unit of energy.<sup>41</sup> Lignite is around 30 % more polluting than gasoline or diesel fuels and around two times more polluting than natural gas. Thus, the Czech energy mix relying from 53 % on coal is extremely harmful towards the environment and climate. Unsurprisingly, the three largest national greenhouse gas polluters are coal power plants: Počerady power plant, Průněřov power plant and Tušimice power plant.<sup>42</sup> Emissions of the major polluter, Počerady power plant, are comparable to the emissions of all trucks in the Czech Republic according to Greenpeace.<sup>43</sup> Emissions of these three power plants account for more than all of the emissions from Czech households. If we include also the fourth largest polluter, Chvaletice, then the 4 coal power plants create more CO<sub>2</sub> emissions than all the Czech cars, planes, trains and ships.<sup>44</sup>

The companies responsible for the extraction of coal in the Czech Republic also have a global impact apart from the domestic one. The coal from the Czech Republic is not only used for domestic production, but also for exports, and it accounted for 0.3 % of all greenhouse gas emissions between 1988-2015.<sup>45</sup> In absolute terms, it is 2,706 megatons of CO<sub>2</sub> emissions. This ranks it among the top 100 polluters in the world. To put this into perspective, this is more than the emissions of the whole world in 1835 or

Electricity share by fuel source, Czech Republic

Electricity production (measured as the percentage of total electricity production) by source (coal, oil, gas, nuclear, hydroelectric power and other renewables). Other renewables in this definition includes biomass, wind, solar, geothermal, and marine power.



Source: International Energy Agency (IEA) via The World Bank

OurWorldInData.org • CC BY

Source: Our World in Data, Available at: <https://bit.ly/2loNQFL>

<sup>40</sup> Electricity Share by Fuel Source, Our World in Data, Available at: <https://bit.ly/2ObUFnj>

<sup>41</sup> How much carbon dioxide is produced when different fuels are burned?, U.S. Energy Information Administration, 4.6.2019, Available at: <https://www.eia.gov/tools/faqs/faq.php?id=73&t=11>

<sup>42</sup> Znečišťovatelé pod Lupou, Arnika, 2018, Available at: <http://znecestovatele.cz/ranks>

<sup>43</sup> Počerady Power Station is the largest CO<sub>2</sub> emitter in the Czech Republic. Chvaletice increased pollution by 43 percent, Greenpeace, 2.4.2019, Available at: <https://bit.ly/2mE1Ewr>

<sup>44</sup> Carbon Dioxide (CO<sub>2</sub>) emissions by sector or source, Our World in Data, Available at: <https://bit.ly/2ObUFnj>

<sup>45</sup> New report shows just 100 companies are source of over 70% of emissions, CDP, 10.7.2019, Available at: <https://bit.ly/2uLTvW1>

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more than Chile, Portugal, Norway or Hong Kong had in 2017.<sup>46</sup>

If the Czech Republic is to contribute towards the greener future that may soften the adverse effects of climate change, the trade-off must focus on coal, both in energy generation as well as exports. However, only the mining industry gives employment to 26,000 people with 13,000 working under ground according to some studies<sup>47</sup>, others estimate 16,400 people working under ground.<sup>48</sup> The number of people working in coal power plants is hard to estimate. According to Czech news portal E15, the power plant Chvaletice employs 348 people.<sup>49</sup> Chvaletice is similar in terms of method and capacity, but differs in annual energy output in comparison with other large coal power plants.<sup>50</sup> A conservative guess, therefore, could estimate the direct employment in the 4 most polluting power plants to be upwards of 1350 people. Ignoring the indirect impacts, following the decarbonisation path could put people working in these facilities in danger of unemployment, if it is not accompanied by a reskilling program or a compensation scheme.

However, it is not only the environmental demands that put pressure on the coal base of the Czech energy mix. The other are the limits of the coal deposits. Exploitable lignite and hard coal deposits are low, and the operational life of the existing mines is roughly estimated from 10 to 50 years<sup>51</sup>. Hard coal deposits in the Czech Republic are estimated to be depleted by 2030 (estimated deposits by the CGS are 42 million of tons in the whole country).

Thus, the move away from coal for exports seems to be decided by nature itself. The move away from coal for energy-generation, on the other hand, rests in the hands of the leading figures as well as the availability of alternatives. One obvious alternative lies in the energy from renewable sources. The share of electricity production from renewables has been steadily growing since 2008 and in 2014 it reached 10 % of all the Czech generated electricity. Around 2 % come from hydroelectric sources like dams. The other sources like wind, but mainly solar started to gain traction in around 2010 due to government subsidies for photovoltaics but failed to keep traction in the long term.<sup>52</sup>

The potential of solar energy remains under discussion. Some researchers claim that geographical limits determine the yearly coefficient of usage for photovoltaic power plants being only between 9 % and 13 %.<sup>53</sup> On the other hand, other studies indicate that solar energy could compensate for up to 50 % of the energy generated from coal in Ústecký and Karlovarský regions<sup>54</sup> – areas where major coal power plants operate.

The more promising alternative is wind. Currently, wind is responsible for around 5 % of energy generated from renewables in the Czech Republic. However, its potential for 2030 is much higher. An analysis by the Chamber of Renewable Energy shows that, in the future, wind power plants in the Czech Republic could cover one third of the electricity consumption. Nowadays, it is 0.7 % of consumption.<sup>55</sup>

<sup>46</sup> CO<sub>2</sub> and Other Greenhouse Gas Emissions, Our World in Data, Available at: <https://bit.ly/2yVDAFR>

<sup>47</sup> Czech Republic - Coal sector challenges and opportunities, Australian Trade Commission, December 2014, Available at: <https://www.austrade.gov.au> > Czech-Mining-Industry-Brief.pdf.aspx

<sup>48</sup> In 25 years coal mining has dropped by more than half, Statistika a my, June 2016, Available at: <https://bit.ly/2lchCxo>

<sup>49</sup> The gross profit of the Chvaletice power plant increased significantly, E15.cz, 13.8.2018, Available at: <https://bit.ly/2mLuA5m>

<sup>50</sup> A direct comparison is offered by Wikipedia in the List of power stations in the Czech Republic, Available at: <https://bit.ly/2JiovmJ>, with data from 2010, more updated data on the webpages of the individual plants is similar to the one offered by Wikipedia.

<sup>51</sup> Seventh National Communication of the Czech Republic Under the United Nations Framework Convention on Climate Change, Ministry of the Environment of the Czech Republic, 2017, Available at: <https://bit.ly/2nbkUS1>

<sup>52</sup> Renewable energy potential in the Czech Republic: Obstacles to achieve it, EUROPEUM Institute of European Policy, 30.5.2018, Available at: <https://bit.ly/2lJ6iIP>

<sup>53</sup> Potential of photovoltaic sources in the Czech Republic and in the world (part 2), OEnergetice.cz, 25.1.2018, Available at: <https://bit.ly/2m2hp04>

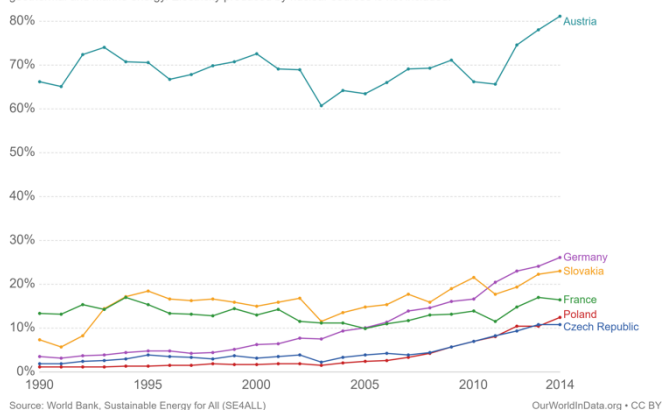
<sup>54</sup> Bódis, K., Kougias, I., Taylor, N. and Jäger-Waldau, A., 2019. Solar photovoltaic electricity generation: a lifeline for the european coal regions in transition. Sustainability, 11(13), p.3703.

<sup>55</sup> Analysis of wind energy in the Czech Republic, The Chamber of Renewable Sources of Energy, March 2015, Available at: <https://bit.ly/1xTKFdp>

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### Share of electricity production from renewable sources

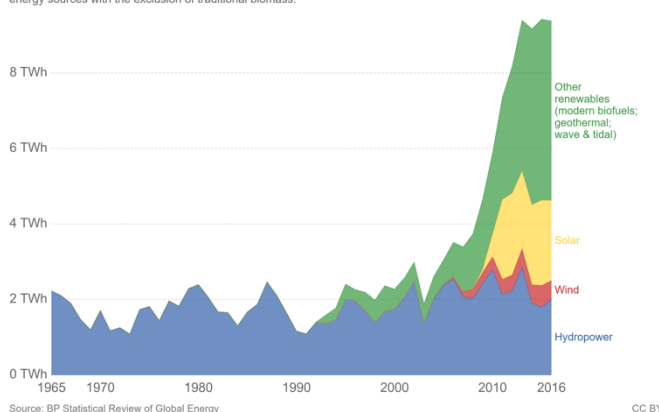
Percentage of electricity produced through renewable sources. This includes biomass, hydropower, solar, wind, geothermal and marine energy. Electricity produced by nuclear sources is not included.



Source: Our World in Data, Available at: <https://bit.ly/2nB1kPt>

### Modern renewable energy consumption, Czech Republic

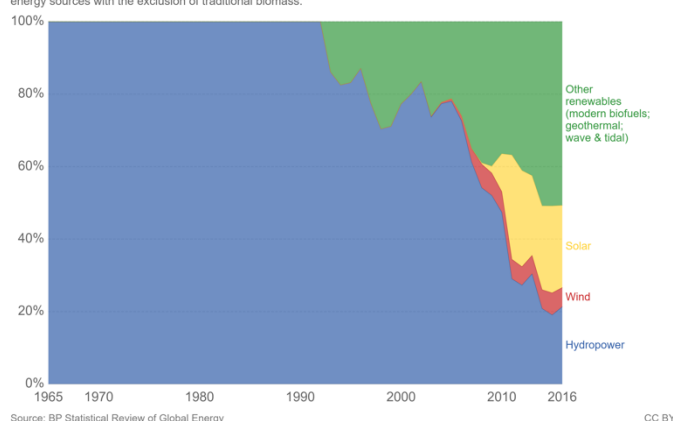
Total renewable energy consumption, measured in terawatt-hours (TWh) per year. This data includes all renewable energy sources with the exclusion of traditional biomass.



Source: Our World in Data, Available at: <https://bit.ly/2loNFu5>

### Modern renewable energy consumption, Czech Republic

Total renewable energy consumption, measured in terawatt-hours (TWh) per year. This data includes all renewable energy sources with the exclusion of traditional biomass.



Turning to the existing coal power plants themselves, the alternatives to the shrinking coal-beds, other than uneconomic imports of coal from abroad, is converting the plants to gas or biomass. Such transition was done elsewhere, with the UK<sup>56</sup> and the US<sup>57</sup> being successful examples. The exact potential and feasibility of such solutions must, nevertheless, be analysed more thoroughly. In terms of gas, the Czech Republic does not have sufficient deposits of the resource, which may pose a threat to the energy security of the nation.

ČEZ group, the Czech state-owned energy company operating two largest and most polluting coal power plants (coal fired power plants currently represent 46 % of both capacity and generation volume of ČEZ group<sup>58</sup>) pledged that the coal-fired power plants will be gradually closed and all electricity generated will be carbon neutral by 2050.<sup>59</sup> There, however, remains to be revealed what exactly the company plans to do to maintain profitability after fulfilling the pledges. The 2019 Annual General Meeting revealed controversial plans of the company to keep coal-based operations in the most polluting plants going through to 2035, in case of the recently finished Ledvice power plant

<sup>56</sup> The Giant Coal Plant Converting to Green Energy, BBC Future, 29.8.2018, Available at: <https://bbc.in/2mECEVR>

<sup>57</sup> Coal-to-Gas Power Shift Driven by Economics, Power Magazine, 10.1.2018, Available at: <https://bit.ly/2mEod46>

<sup>58</sup> CEZ Group: The Leader in Power Markets of Central and Southeastern Europe, November 2018, Available at:

<https://www.cez.cz/edee/content/file/investori/2018-11-investment-story.pdf>

<sup>59</sup> CEZ Group Sustainability report 2017, CEZ Group, 2017, Available at: <https://www.cez.cz/edee/content/file/udrzitelný-rozvoj/cez-group-sustainability-report-2017.pdf>



to 2050 and reducing emissions by selling instead of shutting down coal power plants.<sup>60</sup>

The alternative that is favoured by politicians is nuclear energy. 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. This goes against the global trend of abandonment of nuclear power generation in favour of safer and more economical solutions found in renewables. The targets rest on building additional blocks, as the ones available do not have enough capacity to meet the goals. The proposal is to build additional two reactors in the nuclear power plants Temelín or Dukovany. Currently, the process is halted by unresolved questions of financing the construction.

There are numerous problems with the focus on nuclear energy. One such problem is the issue currently being tackled by the government and that is financing. The optimistic costs per block are 250 billion CZK. However, as Greenpeace argues, the costs of construction of the last 4 finished nuclear powerplants worldwide were up by 332 %, 330 %, 283 % and 219 % respectively.<sup>61</sup> The more realistic costs of the two blocks of Temelín could then reach an enormous 1000 billion CZK, which is about half of the Czech national deficit. Other issues involve the disposal of nuclear waste that results from the energy-generating reaction and safety issues in the face of international terrorism as well as human errors in the power plant operation.

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<sup>60</sup> CEZ AGM goes to extra time but sheds little light on the fate of Pocerady coal power plant, Beyond-coal.eu, 15.7.2019, Available at: <https://bit.ly/2n9YQan>

<sup>61</sup> 10 reasons why nuclear is not a solution to the climate crisis and threatens the transformation of energy, Greenpeace, 11.7.2019, Available at: <https://bit.ly/2mEIXCr>

## Conclusion

What needs to be said is that rapid abandonment of coal for alternatives is not unprecedented. In 2012, coal was responsible for 45 % of energy in the UK, while in 2018 it made up only 5.4 % of all energy supply, with the transformation focusing on biomass, natural gas and renewable sources of energy.<sup>62</sup>

Studies done in the Czech Republic highlight the benefits this change could bring for the nation's economy and society. Expanding the share of RES in the national energy generation from planned 20.8 % to 23 % should come with no additional costs to the public finance given the projections of the price of electricity and other variables, according to analysts of Deloitte. The increase should also positively impact the employment, bringing somewhere between 26,000 to 33,000 jobs, increasing the country's GDP by up to 7%.<sup>63</sup>

Furthermore, the analyses also confirm the feasibility of this rapid transition.<sup>64</sup> If the Czech Republic was to abandon around 80 % of its energy from lignite and around 50 % from bituminous coal, and develop RES, the country

should withstand the transition. The geography of the Czech Republic as a relatively small country allows to avoid problems with energy transfer from wind power plants, which was problematic in Great Britain or Germany; the electric network is ready for the transition and the geography of renewable sources is relatively evenly spread across the country, which allows for effective and efficient employment of sources to the network.

The fight against climate change creates many questions. The nature of the problem undervalues the impact of the change of behaviour of a single actor. However, without the effort of the single actor, the collective action will not be achieved, even if the decision demands some painful and costly trade-offs to be made and incurs a risk of free-riding. The Czech political elites as well as wider public should be aware of the sacrifices that come with transformation towards more sustainable economy. First step in such journey might be supporting collective agreements that may help overcome the collective action dilemma in the international arena. The 2050 EU carbon neutrality vote in December is the most obvious of opportunities to recognize the importance of individual contribution to a collective goal.



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<sup>62</sup> Countdown to 2025: Tracking the UK coal phase out, Carbon Brief, 1.8.2019, Available at: <https://bit.ly/2aSQoB>

<sup>63</sup> Development of renewable sources by 2030, Deloitte analysis for the Association of Modern Energy, Deloitte, 4.9.2019, Available at: <https://bit.ly/2lxXbdY>

<sup>64</sup> How Can Czech Network Withstand The Decrease in Coal Energy and Increase of Renewable Energy Sources, Glropolis, May 2018, Available at: <https://bit.ly/2n0xx2s>