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Czech Republic, Air Quality

### **Czech Republic: Clean Air Initiative**

Due to the unhealthy air quality in the Czech Republic, 11,780 people met premature deaths throughout 2018 (“Czechia - Air pollution fact sheet”). That number is growing at a frightening rate. Others are suffering from chronic illnesses like lung cancer, heart ailments, and asthma. Receiving such a diagnosis ruins lives, leading to many medical appointments, missed work and school, financial instability, and conclusively less time spent with family and friends. The average Czech family consists of two parents and a child. They live in modern European homes with electricity, running water, and refrigeration. Unfortunately, many of these modernized necessities require power, with the largest source of energy production in the Czech Republic being in the coal industry. Coal also happens to be a leading pollutant creating unhealthy air quality (“Czech Republic”). A vast amount of the Czech trade is in the automotive industry, accounting for 9% of the country’s GDP (“Prague Metro”). That means that 9% of the country’s value comes from the production and sale of automobiles, which creates a high demand for vehicles. Therefore, there are roughly 18.8 million automobiles manufactured throughout the Czech Republic (Statista). Currently, the country has no restrictions on the emissions of vehicles. That is very harmful to the environment and is directly correlated to 11,780 premature deaths. The Prague metro system is the fifth busiest in all of Europe, carrying about 1.6 million passengers daily; however, almost all signage is in the native Czech language making it very difficult for foreigners to use the metro (“Prague Metro”). Thus, many rent cars to drive themselves around, emitting unhealthy chemicals into the air. The lack of modernized rural Czech is creating an uneducated, unclean, and unconnected environment. A clean air initiative will enable the Czech government to work with independent contractors and the public to reduce these premature deaths to zero. This initiative will reduce air pollution, empower the green energy industry, and reduce the air quality below the threshold level set by the EU in council directive 92/72/EEC, all by 2035. Solving poor air quality in the Czech Republic by enacting a clean air initiative will ultimately create a cleaner, healthier, and safer environment for Czech citizens, wildlife, and generations to come.

The unhealthy air quality in the Czech Republic can be traced back to many sources, air pollution being a prominent one. There are four significant pollutants in the air: nitrogen oxide (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and particulate matter (Johnson). According to the United States Energy Information Center, there are several principal emissions as the result of coal-based power: “Sulfur dioxides which contribute to acid rain and respiratory illness, nitrogen oxides which contribute to smog and respiratory illness, particulates which contribute to smog, haze, and... lung disease, [and] carbon dioxide which is a primary greenhouse gas produced from burning fossil fuels” (“Coal Explained”). The clean air initiative recommends cutting back on coal power by 20% by the year 2035. To accomplish such an objective, the Czech government will decommission coal power plants and divert the resources previously used on the coal power toward incorporating wind power into the Czech power grid. Many countries have over 20% of their energy derived from wind power, including Denmark (41%), Ireland

(28%), Portugal (24%), and Germany (21%) (World Economic Forum). In 2018, the Czech Republic was the fourth-largest power producer in the EU, with 1/3 derived from coal power (“Czech Republic”). They spent roughly 320 billion CZK (14.4 billion USD) on the coal power industry (“Czech Republic GDP from Manufacturing”). It costs 20 million CZK to decommission one coal power plant and 6.4 million CZK to produce 100 wind turbines. Over the next 15 years, the Czech Republic can efficiently reach 20% overall wind-based power by slowly diverting the 320 billion CZK federal power budget toward this clean air initiative. They can build hundreds of wind farms throughout their extensive plateaus and rolling plains. The minimal wind speed for a wind turbine to produce power is 13 kilometers per hour, and the typical wind speed in the Czech Republic is 14 kilometers per hour (“Wind Turbine Systems”). If the Czech Republic were to try and create a different type of renewable energy like hydropower, they would run into many difficulties. For instance, the average cost of one dam is 40 billion CZK, eight million more than they currently spend on coal power (ScienceDirect). With that much money, the Czech Republic could build 625,000 wind turbines. Therefore, diverting funds from coal power to wind power would effectively increase the Czech Republic’s air quality saving thousands of lives.

Nine percent of the Czech Republic’s GDP comes from the automotive industry. They created an estimated 18.8 million vehicles in 2018 and had 5.75 million registered passenger cars (Statista Research Department). Vehicles are the leading producer of a chemical called PM2.5. Processes like releasing secondary inorganic aerosols, biomass burning, and residual oil combustion also produce the chemical PM2.5 (“Air Quality in the Czech Republic”). PM2.5 is a granular particulate matter that is less than 2.5 micrometers in diameter and is a leading pollutant toward unhealthy air quality. In small quantities, the chemical is beneficial in helping to maintain modern global temps by reducing the atmospheric temperature; however, too much PM2.5 in the atmosphere will cause the opposite effect. Population increases are leading to higher vehicle usage. Being so small PM2.5 has easy access to the inner portion of the lungs. That is what causes those chronic illnesses like lung cancer and asthma. PM2.5 is the basis for why unhealthy air quality is highly toxic to humans, animals, and the environment alike. It poisons rivers, kills livestock, and strikes people with lung disease. While other products like coal significantly contribute to unhealthy air quality through chemicals like sulfur dioxide, carbon monoxide, and nitrogen oxide, none of those compared to PM2.5. To cut back on the PM2.5 pollutant, the Czech government needs to cut back on vehicle exhaust emissions. The United States exhibits an excellent illustration of how to accomplish this. In the earlier 1970’s, the President of the United States, Richard Nixon, signed the “Clean Air Act Amendments” into the EPA or environmental protection agency law. Almost two decades later President George Bush amended this law to be even more environmentally conscientious. It came in a three-part program for lightweight vehicles and one part for the heavyweight. To be considered lightweight the vehicle must be “...a motor vehicle that has a manufacturer’s gross vehicle weight of ten thousand pounds or less” (“Lightweight vehicle,” def. 1). The first lightweight phase was devised in the early 1990s to investigate possible ways of standardizing car emissions. The second phase started in the early 2000s. This phase designed a system of categorization for vehicle emission standards labeled as bins. These bins are numbered 1-10 and allow effective management of vehicles that were bad for the environment, empowering companies to establish a healthier environment. Through those phases, both passenger vehicles were 98-99% cleaner compared to the 1960s (“History of Reducing Air Pollution from Transportation in the United States”). A heavy vehicle is labeled as

a vehicle that has a gross mass of more than 4.5 tons (“Heavy Weight vehicle,” def. 1). Since 2007, heavyweight vehicles are exacted to use ultra-low sulfur diesel. Both heavy and lightweight measures taken on vehicle emissions have greatly helped the environment. In 2017, the most common car sold in the Czech Republic was a lightweight vehicle (Statista). The Czech Republic needs extra emphasis on restricting the emissions of lightweight vehicles, as that will have the most impact on the environment. However, they also need to set stipulations on heavyweight vehicles as those are often the least fuel-efficient (Department of Energy). Carbon dioxide has fallen roughly 5%; furthermore, fuel-based emissions have declined an astonishing 37% (“Air Pollutant Emissions Trends Data”). If the Czech Republic sets emission regulations similar to the United States, the results would be incredible. The Czech government working with the automotive industry to standardize emission levels would eliminate excess exhaust emissions from motorized vehicles and 11,780 premature deaths by 2035. A bill passed by the Czech parliament citing Czech automotive manufacturers to meet standards already distinguished by the European Union and the European Environmental Agency would be solely necessary to accomplish such a task.

The Czech Republic is home to Europe’s fifth-largest metro, carrying roughly 1.6 million people every year. They have over 100 bus lines, 30 tram lines, and three metro lines, with a fourth currently under construction. Much of the public transport is under the management of Prague Public Transport Co. Inc., a state-owned company (“Prague Public Transportation System”). Such means that all the funding for public transportation is also state-mandated. In 2018, the Czech Republic budgeted 9.2% (182 billion CZK) of the Government’s GDP toward public transit (“General Government Operations- 2018”). Currently, there are several problems with the Czech public transportation system. One problem is, their signage is outdated, having chiefly native Czech language written and making it very difficult for foreigners to use the metros, trams, or buses. Another issue is their lack of high occupancy vehicle lanes. The outdated signage also creates a convoluted and anxious atmosphere, causing many people to turn away from public transit options. Instead, many people drive themselves around, emitting even more PM2.5 into the air. To solve this problem, the Czech government must increase the Public Transportation budget by 0.6% or 100 million CZK. Transferring funds from the Public Order and Safety budget, which did not exceed its budget in 2019, allowing it to cover the 100 million CZK cost (“General Government Operations- 2018”); furthermore, increasing this budget is a matter of public safety, as decreasing air quality is causing many unnecessary premature deaths. The money would then be used to create clearer signage and high occupancy vehicle lanes. Mending the signage to have commonly spoken world languages like English, Spanish, and Mandarin Chinese would considerably increase the efficiency of the Czech public transportation system. That would only cost a fraction of the 100 million CZK. The remaining funds would be for high-occupancy vehicle lanes or carpool lanes. In 2019, travel and tourism contributed to 2.2% of Czech GDP growth (436 million CZK). Currently, the Czech Republic tourism outlook has been declining roughly .07% over the last ten years (“Czech Republic”). Changing the transportation signage would remarkably decrease any reluctance to use the public transportation system. That would encourage many more tourists to use the metro, busses, and taxis, increasing Czech tourism. Improving public transportation, which many Czech citizens rely on to get their food, would hugely advance their food security by reinforcing greater access to nutritious and affordable food options. Currently, there are roughly 17 running highways in the Czech Republic (“Roadways and Motorways”). Of these 17 motorways, there are no high occupancy vehicle

lanes. If the Czech government were to allocate money toward this, there would be a considerable increase in carpooling. More than 30,000 people are driving on Czech motorways at any given hour, with an average of 1.67 people per car (“Czech Motorway Network”). Adding these high occupancy vehicle lanes that flow faster than regular traffic will incentivize people to travel together. That not only will help lower the amount of pollution, but it would also lower the amount of PM2.5 in the air saving countless lives.

Urbanization is the process of transforming a rural area into a town or city. As of 2021, 25.8% of the Czech Republic is unurbanized and located in rural, remote regions, decreasing their communication access with the modern world, proper education, and sanitation they deserve (“Urbanization”). In 2017, the average household without access to computers or the internet was 17.8% and 16.8%, respectfully (“Czech Statistics”). These numbers go hand-in-hand with urbanization. While some rural communities are fortunate to have a city close enough for adequate access to these novelties, most are not. Access to computers and the internet is the gateway to modernizing and advancing society. Unfortunately, as of 2019, only 24% of adults aged 25-64 receive a post-secondary education, and for people aged 15-24, 10.7% were neither in education nor employed (“Education Stats”). These shocking statistics lead to a lack of knowledge on relevant topics such as the current air quality crisis in their own country. Sanitation is the process of many technological advancements leading to safe water, sewage, food, and air; however, the unurbanized portions of the Czech Republic have not had the privilege of receiving these necessary improvements. The Czech Republic is ranked 31<sup>st</sup> in the world in life expectancy at 79.2 years (“Czech Republic: Life Expectancy”). To improve the overall quality of living in the Czech Republic, the Czech government must proceed with urbanization. While this might seem like an oxymoron toward a healthier air initiative, it is not. Urbanization does not require building skyscrapers and factories; it can just begin with improved access to better living standards. To urbanize the rural regions of the Czech Republic: there must be an addition to this clean air initiative, a Part Two. This part is more focused on improving Czech food security, quality of life, and education standards. That will ultimately lead to healthier Czech air quality. Improving food security would require modernizing transportation in and out of these remote regions. That would allow these isolated towns to have access to nourishing affordable food. Improving the quality of life can be found in modernized water filtration and sewage practices. Education is essential for societal advance. Czech citizens educated on the unhealthy air quality that blights their nation would be empowering. It would allow for self-awareness, potential increase in recycling, carpooling, and reliance on renewable power. The finances for the increased food security, sanitation, and education would come from the Czech 2022 non-profit fund of 8.4 billion CZK (“romea.cz”). If the Czech government were to invest in this clean air initiative Part Two, it would remain infinitely advantageous to the country and ultimately every Czech life.

Air- people tend to take it for granted in the modern world. Many fail to see the way quality air helps us thrive. Now, it needs help. Tens of thousands of people die from the worsening air quality in the Czech Republic. The poor air quality carries deadly chemicals like PM2.5, silently diagnosing innocent bystanders with chronic illnesses like lung cancer and asthma. Every second nothing changes another life is placed in the hands of hope. The lack of urbanization causes families to be struck by food insecurity with a lack of transport of it. It disables their ability to get healthy food, therefore decreasing their quality of life. Currently, the Czech government is

trying to improve air quality through small initiatives, but their efforts are futile compared to the pollutants choking their air. They tell people to stop littering and to carpool more, but people are slow and unreceptive of change. They need to enact this clean air initiative quickly. By drastically improving air quality by 2035, they can save thousands of lives. The government must decommission coal power plants, pass parliamentary bills on vehicle emission standards, invest more in public transportation, and urbanize the remote Czech Republic. A clean air initiative is for the good of not only the Czech Republic but the world. If not for the innocent lives taken by unhealthy air quality now, then to create a better life for Czech generations to come.

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