



SHADOW COAL COMMISSION  
POSITION ON COAL PHASE-OUT IN  
CZECH ENERGY SECTOR

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## Introduction

The Shadow Coal Commission (SCC) is a group of independent scientists, experts and people from regions affected by the mining and burning of coal. The commission was established due to the fact that the Czech governmental Coal Commission does not adequately take into consideration some of the key topics connected with coal phase-out and its substitution in the country's energy mix. Also, despite previous promises that the governmental Coal Commission would primarily consist of experts from relevant disciplines, it is predominantly composed of politicians and representatives of various special interest groups.

In this summary of its position, the SCC presents a perspective proposed by technical experts, scientists, climatologists and social scientists, as well as citizens from coal regions who would otherwise be disregarded by the official commission. The SCC also aims to correct certain disputable assumptions of the governmental Coal Commission, such as its serious undervaluation of the potential of renewable energy sources (RES), insistence on the unfeasible plan of the Czech Republic in regard to energy self-reliance and its insufficient evaluation of the risks related to fossil gas and the construction of new nuclear reactors. The SCC does not approach coal phase-out as a solely economic threat, but rather as an opportunity for the transformation of coal regions and the country's energy sector.

This document is not a manual presenting technical details for the coal phase-out. The SCC compiles available data and facts concerning the energy sector, climate, and the Czech Republic's various obligations, as well as social and economic aspects. The SCC believes the government should take these facts into consideration when implementing the phase-out plan. The SCC also recommends the government to commission its own additional and necessary research and studies. Furthermore, the SCC covers the largely overlooked area of opportunities which the coal phase-out may bring about in terms of employment and positive effects on public health.

The document is based on recent scientific studies and analyses undertaken by renowned institutions and organizations, in some cases commissioned directly by the government. It is a summary of the SCC's key findings and recommendations, and does not contain an exhaustive overview of all published outcomes and commentaries by individual members. These have been published in past months and are available on the [SCC website](#).

# 1. How quickly do we need to reduce greenhouse gas emissions?

- A. In 2015, most states of the world signed the Paris Climate Change Agreement, with almost all of them subsequently ratifying it [1]. They therefore supported its primary aim: to keep global temperature increase within this century well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. It is still possible to decelerate global warming caused by greenhouse gas emissions and to meet the overall goals. However, with the level of existing progress, global emissions would not be likely to decrease in the following years. Without reducing emissions gradually every year, the Czech Republic will have to face necessarily larger and more drastic measures in the future. If the Czech Republic wants to take the path of the least costs possible, it is necessary to reduce carbon oxide emissions by 55% (compared to 2018 levels) by 2030 in order to meet the 1.5 °C (or at least 25% for the 2 °C goal, respectively) [2]. If global emissions stay at the current level for another five years, the Paris Agreement goal would become unreachable [3].
- B. In rich countries including the Czech Republic, CO<sub>2</sub> emissions should be approaching the net-zero level by 2040 [3].
- C. The current discussion about shutting down coal-fired power plants (with the exception of heating plants) must be based on the facts described in the previous two points. Rapid shutdown of coal-fired power plants is an essential first step towards the decarbonization of the Czech Republic and the European Union in the next two decades, but certainly not the ultimate one. The transformation is only possible if the pace of RES building increases, and at the same time their degree of connection with the points of consumption must be secured – also at the international level (see below).

## 2. Deadline for termination of coal use in sources primarily used for power generation

- A. For the above-mentioned reasons, the SCC recommends as quickly as possible the phasing out of coal, and subsequently also the phase-out of fossil gas from the Czech Republic's energy mix as priority measures of climate and energy policies. The specific deadlines need to be based on thorough independent analyses considering primarily climatic but also social and economic impact.
- B. To reach the goals of the Paris Agreement, coal must be excluded from the energy mix by 2031 at the latest [4]. This has to be the principal argument in the debates regarding the deadline of the termination of using of coal as a source of energy. The SCC is concerned that if the Czech Republic fails to meet this goal, it will not be able to meet the EU goal – achieving carbon neutrality by 2050 [5]. Reaching this goal will require not just further changes in the electricity sector (phasing out of fossil gas, major enhancement of power storage systems, and expansion of long distance transmission systems necessary for the best use of solar and wind energy), but also in civil engineering (completing the thermal insulation of all buildings, retrofitting most Czech buildings to the passive standard, preferential heating by biomass, CO<sub>2</sub> emissions-free production of cement), transportation (support of cycling, pedestrian traffic, public transport, electromobility, or vehicles driven by sustainable or renewable generated synthetic fuels) and agriculture (decreasing the volumes of cattle farming) etc.
- C. The SCC believes the main instruments for the achievement of carbon neutrality consist of raising the price of coal extraction combined with direct regulation (ban on the burning of coal by a specific year), in keeping with the scenarios and recommendations of the report of the Intergovernmental Panel on Climate Change (IPCC) [6].
- D. Coal is gradually becoming economically untenable [7], whether due to increase in the price of emission permits [8], or the price of renewable sources of energy going down. To avoid subsidizing the coal industry in a bid to save existing jobs in coal mining regions (as was the case with the OKD mining company [9]), the state should set as its priority for the years 2020–2030 a sustained effort to switch to alternative sources of energy, so that by 2031 at the latest the Czech Republic can remove coal entirely from its energy mix.
- E. The critical factor here is the rapid closure of coal power plants. Even so, phasing out burning fossil gas as a source of energy must follow, if only a little later.

### 3. Ambitious study of emission reduction and renewable development

- A. Based on the above, the SCC's recommendation is that the government commissions a study that would outline more ambitious goals for the reduction of greenhouse gas emissions by 2030 than hitherto proposed for the Czech Republic. Apart from the energy mix, this study should also consider models of its social and economic benefits and costs.
- B. The SCC further recommends that the government commissions a study of the possibility of fully supplying the Czech Republic through renewable sources of energy. It is to this aim that all steps undertaken to reach the goal of phasing out coal as an energy source and the related transformation of the energy sector should lead. These models should nevertheless also work with the scenario in which the Czech Republic is not self-reliant in terms of energy production and a significant part of its energy from renewables comes from outside sources, where conditions are better suited for its production.
- C. The studies should be conducted by respected and independent research institutions specialized in the field, with a long track record in developing energy scenarios and whose research has been published in peer-reviewed journals.
- D. The models thus developed must be evaluated also in terms of their social and economic impact. The results of the studies should thus be submitted to social science research establishments and universities, which would then conduct an analysis of the social and economic impacts of the considered scenarios.
- E. The extant studies emphasize costs, while ignoring the benefits of transformation:
  - a. improvement of environmental conditions and a decrease in the externalities of the fossil energy system, which according to the International Monetary Fund, amounted to 6.5 % of global GDP in 2017 [10].
  - b. technological opportunities expanding into a wide range of fields of human activity (physics of thin films, material engineering, hydrodynamics, thermodynamics, geology, agriculture, forestry...)
  - c. creation of new jobs (see Section 9.)

## 4. Energy self-reliance

- A. No scientific study to date has showed that a carbon-neutral (decarbonized) Czech Republic could be supplied exclusively with locally-produced electricity. Posing the requirement of full self-reliance disregards both historical reality as well as the fact that the Czech Republic is a member of the European Union. Even if in time the Czech Republic covers its annual quota of final energy consumption through energy produced within its territory, this will not by any stretch cover consumption from domestic sources continuously.
- B. The minimum size of territory that can be envisioned as self-reliant in terms of energy production is the territory of the EU together with its closest neighbours [11]. This region is already interconnected via power grid systems, but nonetheless transmission capacities must be significantly expanded in the future. This concerns in particular the long-distance networks, such as the pairs of HVDC conductors (HVDC: high voltage, direct current).
- C. An absolutely crucial step towards self-reliance is the reduction of energy consumption. The largest consumption of fossil fuels in the Czech Republic is related to space heating. Space heating represents about 35 % of energy consumption in the local territory [12]. A huge potential lies in retrofitting buildings to passive house standards [13]. In order to make this form of passive regeneration feasible, changes in legislation must be introduced.

## 5. Energy storage

- A. Relying largely on technologies which have not yet been implemented on a mass scale would be neither sensible nor responsible. Still, it is even worse to continue postponing the development of wind and solar energy applications by claiming that other technologies such as battery storage need to advance first. This would be a short-sighted approach – the Czech Republic would avoid making changes now, but transformation will be required for climatic and economic reasons anyway. The fact is that battery technologies continue to develop rapidly. It can therefore be expected that the stationary battery storage market will expand as well.
- B. A substantial share of energy is used for heating and cooling. In this area, daily to weekly accumulation is simple and cheap, and ought to be standardized. Large thermally insulated heat/cold storages, freezers and freezing rooms can be prepared in advance as required, according to the present or predicted price and level of power generation. These solutions are now technically feasible [14].
- C. There is huge potential for energy accumulation in buildings being retrofitted to the passive standard [15]. Even without artificial heating or cooling, the room temperature is convenient and stable for a long time. It is possible to heat or cool these at those moments only when non-fossil energy is in abundance.
- D. Energy use of biomass in the EU can only rise moderately. The share of renewable energy can be slightly increased through local heating with biomass and biogas stations. Their cogeneration units should ideally be used at those moments when there is not enough solar and wind power [16].
- E. A considerable and large amount of energy storage can be achieved with the decomposition of water to oxygen and hydrogen via the use of electrolysis. However, a significant growth of this technology can only be expected after the amount of solar and wind applications increases to the extent that there would not be any other immediate use for their power. There exists a publication on the EU's hydrogen strategy [17] as well as its critical analysis [18].
- F. A comprehensive overview of the current situation and potential developments in the EU was introduced in the "Study on Energy Storage – Contribution to the security of the electricity supply in Europe" published in March 2020 [19]. Nevertheless, this does not offer models for de-carbonization to the extent required by 2030 in order to meet the Paris Agreement goal.

## 6. Fossil (natural) gas<sup>1</sup>

- A. The SCC does not endorse the building of new oil and gas pipelines. Consumption of fossil fuels including fossil methane must be urgently reduced. The SCC also takes into account geopolitical reasons. It is advisable to decrease the EU's dependency on Russia and unstable Middle Eastern countries. As for the activities of Turkey and other countries striving for extraction outside their territorial waters, these efforts are also considered dangerous.
- B. Methane, the main component of fossil natural gas, has a strong greenhouse effect. During its extraction, transport and distribution (to appliances such as gas burners and engines) methane escapes from leaky joints or pumps. If the amount of methane leaked during this process reaches 3 percent, which is not unusual, its impact on climate is no better than that of coal. During the first twenty years, one kilogram of leaked methane captures 86 times more heat in the atmosphere in comparison to one kilogram of emitted CO<sub>2</sub> [20].
- C. Substitution of coal with fossil gas would result in its higher consumption and the building of new pipelines with more leakage, meaning the opposite of de-carbonization, by which the SCC understands not only the reduction of CO<sub>2</sub> emissions from fossil fuels but also other greenhouse gases. The expansion of gas infrastructure would cause a further rise of greenhouse gas emissions and dependence of the Czech Republic's economy on another fossil fuel [21].
- D. Thorough discussion on the questionability of building new fossil gas infrastructure – not only from the climatic point of view, but also in terms of the economy (*stranded assets*) – has been provided in a 2020 study by the German Institute for Economic Research [22]. A study by the Artelys consultancy company proves that the existing gas infrastructure in the EU is sufficient for all de-carbonization scenarios [23].
- E. Passive standard buildings would allow not only energy savings, but also a more efficient use of fossil gas compared to current Czech heating plants. Instead of burners, engines could be used for gas combustion – and they would only be working in times when there is not enough electricity, i.e. only for cogeneration.

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<sup>1</sup> Strictly speaking, natural gas is raw gas which escapes or is extracted from underground. It mainly consists of methane, but also contains CO<sub>2</sub>, hydrogen sulphide, water vapour, nitrogen and higher hydrocarbons. It forms from old dead biomass in geological processes and is thus a fossil fuel. Before distribution to consumers via gas pipelines, most ingredients besides methane and small amounts of ethane are typically removed. "Fossil methane" is therefore a suitable name which comes in useful to differentiate it from "biomethane", i.e. gas produced in biogas stations (where other compounds are also separated in the resulting product).

## 7. Nuclear energy

- A. Nuclear energy is independent of weather conditions, the time of day or season, and has a constant level of efficiency with a capacity factor of 80–90 %. This fact makes nuclear energy necessary for the time being. However, the length of construction is a major downside of nuclear power plants. It is expected that the new block of the Dukovany power plant will not be opened earlier than in the late 2030s, which makes nuclear energy unfit for emission reduction in the upcoming decade.
- B. Nuclear energy is the most demanding energy source in terms of investment and it furthermore has an unstable degree of political support. The building of new reactors is becoming increasingly expensive due to higher safety standards. Another reason for the price increase is the lower number of newer power plants, which makes their production “less serial”. No competitive market principles can be applied here; on the contrary, nuclear energy needs state guarantees.
- C. The SCC also finds the need to import uranium problematic. Domestic uranium mining has been terminated. Moreover, uranium mining in all countries including the Czech Republic has considerable environmental and thus also economic impact, as described, for example, in an OECD study [24].
- D. The issue of nuclear waste storage is also largely unresolved. Besides environmental threats, it also brings about discontentment in communities located near planned storage facilities. So far, there has not been legislation related to the involvement of the public in decisions concerning nuclear waste storage. For better understanding, public discussion and participative methods should be employed (see chapter 10). Controversies may otherwise result in additional costs as described in the Czech Republic’s Supreme Audit Office report on deep repositories of nuclear waste [25].
- E. Given the above-mentioned economic, social, political and practical objections, the SCC recommends that the government focus on the development of renewable energy sources. In order to meet the climate goals the Czech Republic has committed to, it is necessary to significantly increase the RES share in the energy mix. This can be achieved faster than increasing the nuclear energy production. Although older studies stated that nuclear energy is cheaper than that from renewables, current studies find that energy generated from RES is cheaper than either nuclear or fossil fuel energy. This is mainly due to the fact that the price of RES keeps going down [26]. Solar energy is currently the cheapest of all energy sources [27].

## 8. Economic and health impacts of the prolonged mining and burning of coal

- A. The extraction, development and consumption of fossil fuel energies are financed directly from the national budget. In addition, they have a negative impact on peoples' lives, damaging both their health and local environment. A study conducted by the independent think tank ODI focusing on fossil fuel subsidies in Europe cites that the Czech Republic's annual subsidy to fossil fuels amounts to circa 45 billion CZK, predominantly through state-owned companies. This sum includes national budget and international support, investments in state-owned companies, and state support for coal extraction and energy production, energy transformation paid from public funding and for fossil fuel consumption in terms of industry, trade and agriculture [28].
- B. The Government Coal Commission should consider not only the cost of phasing out coal, but also the costs of the continued mining, processing and burning of coal, and above all of healthcare and compensation of the damage caused to peoples' health. This goes for both direct (micro) and indirect (macro) factors, i.e., also the impact on public health caused by climate change accelerated by coal emissions.
- C. A model of the impacts of coal mining is presented in a study commissioned by the Czech Ministry of Industry and Trade in 2015 [7]. According to this study, in years to come the state will spend 600–900 million CZK per annum on external costs. 92 % of these externalities represent “cost of treatment, loss of productivity as a result of disablement, and in the greatest part loss of wellbeing as a result of premature death, pain, or other infringement caused by ill health. Almost all estimated impacts on human health are caused by emissions of primary PM2.5, PM10 and NOX and by secondarily produced ozone”. This study lists only “national” impacts on Czech territory (and thus does not include externalities caused by climate change outside of the Czech Republic).
- D. Emissions from coal power plants produce, among other things, fine particle matter, benzo[a]pyrene or PM2.5, designated by WHO as carcinogens [29], which can penetrate the bloodstream and increase the risk of cardiovascular diseases. The population of the Czech Republic's coal regions in the north of Bohemia and Moravia still has a shorter average life expectancy than the rest of the country. Children are also afflicted – in the coal regions, the weight of babies at birth is lower than average, while other impacts on children include higher risk of respiratory diseases and mental health issues. The effect on health is thus a long-term problem, already now impacting future generations [30].
- E. The phasing out of coal will have a major positive impact on the public health in all of the Czech Republic, and these benefits should play a key role in the decision-making process regarding the proposed timeframe of the phase-out.

## 9. Jobs and regional transformation

### 9.1 Jobs

- A. According to available research, the phasing out of coal can bring about the loss of up to 25 thousand jobs directly in the sector of mining and development as well as other related sectors [31]. Given the current and growing requirements to reduce emissions and higher standards of effectiveness in power generation from coal, the energy sector will inevitably undergo major transformation.
- B. In contrast, the number of jobs in the sector of renewable energy sources has been growing in recent years. While in 2017 there were approx. 32 500 jobs, in 2018 there were 39 100 [32], representing at this point a higher share in the total number of jobs in the Czech Republic than the coal sector.
- C. In the renewable energy sources (RES) sector the growth figure of new jobs may in fact surpass the number of jobs lost as a result of coal phase-out. According to a study by Deloitte, an increase in the share of RES in Czech Republic's energy mix to 23.8 % by 2030 would create up to 33 000 new jobs [33]. This nonetheless would require governmental support for the development of RES as well as a qualified workforce.
- D. Where retraining is unfeasible due to age or health, other forms of compensation must be considered, such as short-term payments or early retirement scheme with pensions paid in full. According to the results of a questionnaire-based poll conducted by ČOSE [Czech energy sector trade union] a large part of energy sector employees believe not only that the state should pay for retraining courses in full, but also that it should provide comprehensive guarantees, or at least partial compensation in order to enable them to keep their living standards [34]. In any case, supporting employees, particularly at lower-qualification and lower-income levels, is essential. Not least in terms of related social issues and poverty prevention.
- E. For retraining to have the desired effect, it is necessary to conduct a comprehensive and long-term program of defining the skills needed in the labour market. With ongoing technological developments, the labour market and companies' requirements for new employees are undergoing seminal changes. The new jobs often require entirely new sets of skills.

### 9.2 Examples of successful transformation

- A. Coal mining regions can be, and must be, economically disengaged from their dependence on mining, through a shift towards a development of new manufacturing and energy production technologies and services. The extensive experience of other countries can be made use of to this end. In the Netherlands region of Limburg, coal phase-out

launched the use of geo-thermal, wind and solar energy. The site of a surface mine in Klettwitz (Germany) was used to build a wind farm [35]. In Hungary, a closed coal mine was equipped with solar panels [36], while power storage facilities are being successfully tested in a former underground mine in Leith (Scotland) [37].

- B. Inspiration can also be found in the Slovak region of Horná Nitra, where transformation of a coal region is currently under in progress.
- a. The strategic action plan for phasing out coal mining in the area of the municipalities of Handlová, Nováky and Prievidza was developed in participation with local communities, an initiative started by the mayor of Prievidza [38].
  - b. The plan was created following a series of broad public debates, with more than 50 stakeholders taking part – local citizens and civic organizations as well as businesses, thanks to which comprehensive solutions were found for the transformation of the region as a whole. Alongside the economic sphere, the transformation plan also emphasizes social and environmental issues, quality of life, infrastructure, and the energy sector. The action plan defines the vision for the transformation of the region, foundations for the initiative, its priorities and various transformation measures, pilot projects and financing options.
  - c. The action plan defines specific issues and obstacles that must be removed to enable the region's development (insufficient road infrastructure, need for small business and tourism support schemes, etc.). The plan specifically makes a point that the money provided by the Just Transition Fund does not go only to the mining companies.
  - d. At present it is becoming evident that fears of a major rise in unemployment are unfounded where transformation is conducted effectively [38].
  - e. The transition from coal mining to new employment options and new energy has been winning considerable public support.
  - f. Last year this Strategic Action Plan was endorsed by the Slovak government, which proposes an end to coal mining (for electricity production) by 2023.
- C. Early experiences in the Czech Republic also show the possibility of an active and managed transition of coal mining regions to advanced technologies.
- a. In the region of Sokolov, the brown coal mining company Sokolovská uhelná is in the process of closing down its pressure coal processing plant in Vřesová. The company is rebuilding its power plants and has granted its area of a former slag heap for the construction of a new tech centre.
  - b. Thanks to EU financial aid, the company gives employees who have been made redundant severance pay for up to 12 months in order to help them find new jobs. The Czech government is preparing to give the redundant workers further support

via monthly lump payments for up to 40 months, as well as subsidizing companies from other fields to employ these workers in future.

- c. Civic initiatives in the region have opened public debate about its future without coal, approaching local and regional political representation with the outcomes of this ongoing debate.

### 9.3 Regional transformation

- A. Renewable energy projects can become part of community energy systems. Energy communities can be constituted by municipalities, local citizens and small business owners connected to the energy sector. Energy communities thus offer new opportunities for citizens to actively become part of new energy issues and policies. The possible advantages of an energy community include lower energy prices, reduced air pollution, energy self-reliance, generation of financial income for the community, boost to the local economy, and the creation of new jobs. In low-income communities, the costs of investment may be an issue. This can be solved by means of investment grants, loans, or new financing schemes [39].
- B. Denmark, Germany, Netherlands, Spain, Poland and other European countries already have a number of community energy projects. A few also exist in the Czech Republic, but due to weak state support and legislation new ones are emerging only slowly (for examples see [40]). On the European level, community energy does have support. The “Clean Energy for All Europeans” package and “Green Deal for Europe” recognizes and offers a support framework for citizens and energy communities. Its incorporation into Czech law will be essential condition for the successful development of energy communities in the Czech Republic [39].

### 9.4 Recommendations for employment policy in relation to coal phase-out

- A. Given the changing requirements of the labour market and the current trend towards the inevitable loss of jobs in coal mining related industries, the Czech Republic should not delay the deadline of the total phase-out of coal, since this will not only not help to mitigate the impact on employment, but may in fact increase the overall cost of the wider transformation of coal regions [41].
- B. As part of the coal phase-out strategy and the prevention of its negative impacts on employment, especially in the coal mining regions, it is necessary to prepare new employment support strategies and policies.

- C. Employment policy in coal regions should be based on the analysis of skills that are in demand in the wider labour market and an analysis of the workforce (*knowledge-based policy*). Retraining programs in particular must be based on analysis.
- D. Employment policy in coal regions should aim to create conditions for the creation of decent jobs.
- E. A good strategy for employment policy is support for building RES in coal regions: utilizing the coal mining areas that will be abandoned in the future such as their slag heaps, pits, etc. and at the same time supporting the creation of new jobs in areas that are most heavily hit.
- F. The funding designated for the support of coal regions must go directly to local citizens, municipalities and small businesses. It should support the retraining of people leaving the coal industry, and new projects which can bring clean new jobs. Funding earmarked for the structural transformation of these regions must not end in the bank accounts of large-scale energy corporations.

## 10. Communication and participation

- A. A key issue in the debates on phasing out coal in energy production and transformation of coal regions is communication. It's not simply a footnote to the material issue of phasing out fossil fuels. When conveyed inappropriately, misguided communication in itself can in fact create social resistance to proposed measures for adaptation and mitigation.
- B. The current Covid-19 crisis has shown with abundant clarity that the definition of social issues and their solution should be negotiated via public debate, which is absolutely decisive in terms of what measures can be accepted and taken seriously, and which will be rejected. Public support for proposed solutions is directly connected to how we frame the essential communication. This factor is absolutely decisive. Uncertainty can result in rejection and a lack of will to participate in solutions that can be of key importance for the future. As our current predicament again amply illustrates, the active dispelling of existing misconceptions should form an important component of communication strategies in the process of transformation of the coal regions (and not only these).
- C. It must be communicated quite clearly that the dilemma we are facing is not one of continued well-being and prosperity versus climate protection, but that climate protection is in fact the essential prerequisite of continued prosperity. Similarly, the current Covid crisis is not a dilemma of health vs. economics, because ensuring public health is a prerequisite for a functioning economy. Neither an out-of-control epidemic, nor a climate crisis make meaningful economic activity or continued well-being possible.
- D. The phase-out of fossil fuels helps to safeguard health standards and future prosperity for our children. This requires a communication strategy involving both traditional media and social media influencers who can help explain issues related to fossil fuel phase-out and how to make sure this is done fairly. Communicating these issues must not only explain the transformation itself, but also convey that it offers new opportunities for people leaving the fossil industry to find new employment and purpose.
- E. Public support is won by trust, which in turn develops from clear and coherent communication. Participatory platforms must form an important part of communication strategy, as a space for meeting and confronting of political positions, expert background data and the experiences of those who feel threatened by the changes and the measures.
- F. The current Covid crisis has yet again clearly shown that it is not enough to just keep saying that we can only do this together. Action must be taken to help the public, or a major part of the population, see that the steps which are being planned and carried out are under their control and to their benefit. These debates can take place within the framework of traditional media, new or online media, as well as in the format of public discussions using participatory methods, as for example in the regions hit by coal phase-out. The key importance of participatory methods is illustrated by the example of the transformation of the Slovak region of Horná Nitra mentioned in the previous section.

## Conclusion and recommendations

- A. Given the fact that the Czech Republic is committed to the goal of the Paris Agreement to maintain global temperature rise within this century well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius, as one of the wealthier countries Czech Republic ought to reduce the balance of CO<sub>2</sub> emissions to zero already by 2040. Phasing out electricity production from coal is only one of the steps Czech Republic must make towards carbon neutrality. The current debate regarding the closure of coal power plants that do not provide heating for the immediate vicinity must be based on this same premise.
- B. In order to achieve the goal of the Paris Agreement, electricity generation from coal must be phased out by 2031 at the latest, and further it is also necessary to phase out reliance on natural gas, increase the number of power storage systems for solar and wind energy sources, and to transform civil engineering, transportation and agriculture.
- C. Given the soaring prices of emission allowances, coal is becoming economically untenable. For this reason, switching to new sources of energy must start as soon as possible with the aim of phasing out coal entirely from the energy mix by 2031 at the very latest.
- D. The SCC recommends that the government commissions a study proposing more ambitious aims in terms of the reduction of greenhouse gas emissions by 2030 than the goals proposed for the Czech Republic thus far. Apart from the energy mix the study should offer a model of the social and economic benefits and costs. The SCC further recommends that the government commissions a study of the possibility of fully supplying the Czech Republic with renewable sources of energy. The minimum size of energy self-reliant region is the EU together with its close neighbours. It is therefore necessary that the study includes in its model the export and import of power.
- E. Self-reliance can be greatly boosted by reducing power consumption. The largest share in fossil fuel consumption in the Czech Republic is the heating of buildings. The option of retrofitting buildings to the passive standard therefore should be supported by changes in the current legislation.
- F. The SCC does not endorse building of new oil and gas pipelines. The consumption of fossil fuels including fossil methane needs to be reduced rapidly, not only because burning gas produces CO<sub>2</sub> emissions, but also because it is barely possible to eliminate methane leakage during the transportation of natural gas. Nuclear energy is the most demanding energy source in terms of investment, and takes the longest to construct. The SCC thus believes it is essential that the government focuses on the development of energy from renewable sources. This can be achieved several times more quickly than increasing nuclear energy production.

- G. The Coal Commission should consider not only the costs of coal phase-out, but also the costs of continued extraction, processing and burning coal, first and foremost the costs of healthcare and compensation of the damage to public health. These costs amount to 600–900 million CZK a year. Coal phase-out will have an unarguably positive effect on public health in the Czech Republic as a whole, and these positive impacts should be the key factor in decision-making regarding the coal phase out timeframe.
- H. It is necessary to prepare as soon as possible employment policy strategies for the transformation of the coal regions. Employment policy should be based on the analysis of skills in demand on the labour market and the structure of the workforce. Retraining programs in particular must be based on analysis. The goal of employment policy ought to be the creation of conditions for the rise of new, decent jobs. The creation of new jobs in coal regions can be assisted by RES support policy.
- I. Funding designated for the support of coal regions must serve for the retraining of people leaving the coal industry and creating new, clean jobs. Examples from other countries show that successful transition from fossil fuels to renewable sources of energy is possible, often using participatory methods involving a wide range of stakeholders in the decision-making process and public debate. A planned and managed transformation effectuates the regeneration of coal mining regions and the security of new jobs, thus winning public support.
- J. It is essential to introduce to current Czech law the legislative framework of support for citizens and energy communities as outlined in the “Clean Energy for All Europeans” package and by “Green Deal for Europe” (2019), thus supporting the formation of energy communities that already successfully exist in other countries, with benefits such as direct participation, lower energy costs, reduced air pollution, increased energy self-reliance, generation of income for the community, support for the local economy and the creation of new jobs.
- K. The government must avoid any misleading communication regarding the phasing out of coal mining and burning to the public. Its communication strategy should include fact-based explanation of the coal phase-out and the dispelling of myths. It is also crucial to communicate the new opportunities. Participatory platforms should play a significant role in the communication strategy, as a place for sharing expert and political positions and the perspectives of stakeholders. The government should avoid conveying a sense that energy industry transformation is a question of prosperity vs. climate protection, since such communication would alienate the public whose support is crucial to a successful transformation.

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