



# JUST TRANSITION IN CZECH REPUBLIC



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## Summary

There are three regions in Czech republic where coal is mined. Two regions, placed in the Northwest host several open pit mines with lignit. Contrary, Moravskoslezský region is known for underground mining of black coal. Both areas are known for very bad environmental and social conditions with number of problems following the releasing miners from work.

At this moment, mining and energy sectors employ 30 000 people at the most. It is expected that mines and related power plants will be closing continuously in following approx. 20 years. The closure of one mine is supposed to generate not more than 1 500 workers which is for example over 10 percent of current state of unemployment in Ústecký region. The amount of workers employed in the renewable industry. Despite the fact there are plans for expansion renewables on the place of former mines, it is not considered as the industry which should replace coal related industries. All the region desire broader transformation. In matter of economic transportation, it is needed to bring more various industries of the third sector and especially services and SMEs. Except of that, the key-areas of transformation are education, social situation and environment.

Czech republic is the only CEE country which has a governmental strategy for transformation strategy of its coal regions. It is probably the most effective way how to support the transformation at this moment. To ensure its positive impacts public participation needs to be at the core of the strategy. It is also needed to identify and overcome the barriers of the poor ability of the regions to receive financing from EU funds and other sources.

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## Introduction and context

The Czech Republic has a fairly long tradition of coal mining and processing, dating back to the mid-19th century. While consumption of coal has fallen since its peak in the 1980s, it still plays a major part in the Czech energy mix up to today (51% in 2016)<sup>1</sup>.

Black (bituminous) coal is found in the eastern part of the country, in the Moravskoslezský region. There is currently an estimate of 42 million tons of extractable reserves left. Due to the falling prices of black coal worldwide, mining in this region has become economically unprofitable and has been in steady decline for the past years, falling from 13 million tons per year in 2005 to 7 million tons per year in 2015. The mine-operating company has since gone bankrupt and it is expected that the last black coal mine will be closed down in 2023.<sup>2</sup> Recently, the mine Paskov had been closed in 2017 and over 1000 miners were released from the company. Some of them were requalified for different specialisations as for example IT workers.<sup>3</sup>

Brown coal (lignite) is found in the north-western part of the country, in the Ústecký and Karlovarský regions (referred to also as the Severozápad/Northwest). Brown coal accounts for around 63% of all coal reserves in the Czech Republic. In absolute numbers, brown coal mining in the Czech Republic is still going strong, however, in relative terms, it has fallen significantly: from 43 million tons in 2011 to 35 million tons in 2016. This is mostly due to the increase of cheap coal imports from abroad and the mining limits imposed on certain quarries.

In 1991, the Czech government introduced territorial mining limits on brown coal mines, preventing the existing surface mines from expanding their territories and infringing upon inhabited areas. However, in 2015, the government amended these limits to allow for more mining in some of the quarries. Environmental organisations, as well as locals concerned with the health effects of the decision, have since been protesting against the breaching of the 1991 limits. There are four main mines in the Northwest: Bílina, ČSA, Nástup-Tušimice, Vršany. The ČSA mine is supposed to close in 2025. The other mines (Vršany, Bílina) could operate till 2040 or even longer. In addition, there is a possibility that limits of the ČSA mine will be extended in 2020 so the mining could continue even past 2050.

## Current situation in coal regions

The coal mining regions of the Czech Republic are also among the most underdeveloped ones in the country. They have several problems which are linked to or even caused by the mining. The unfavorable situation of the regions has been studied several times to identify the specific causes of the situation and to propose subsequent solutions. The most recent analysis of the situation was made by a government initiative called Restart.<sup>4</sup>

The very poor state of the social situation in the regions is a publicly known fact. Analyzes and studies, however, conclude that the issue of the region is much more complex and can not be narrowed down only to the most visible problem, a large number of socially excluded citizens. The

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<sup>1</sup> <http://www.ote-cr.cz/statistika/narodni-energeticky-mix>

<sup>2</sup> <http://tn.nova.cz/clanek/stat-do-pul-roku-prevezme-okd-do-peti-let-zavrou-vsechny-doly.html>

<sup>3</sup> <https://zpravy.aktualne.cz/ekonomika/z-horniku-jsou-ajtaci-prvni-propusteni-z-paskova-absolvovali/r~43a52802840711e7bce3002590604f2e/?redirected=1540389006>

<sup>4</sup> [http://restartregionu.cz/content/uploads/2016/10/Strategicky\\_ramec.pdf](http://restartregionu.cz/content/uploads/2016/10/Strategicky_ramec.pdf)

situation in the regions is also poor in many other aspects such as economy, research and development, environment, human resources, infrastructure and public administration. In all of these areas, the coal regions have considerable shortcomings.

The problem areas are interrelated and form a vicious circle where one problem causes another problem and cannot be resolved without the prior one.

In the region of Northwest Bohemia, a number of events have occurred in the past, leading to the generally low level of patriotism of the local population. The first breakthrough was the removal of the Sudeten Germans after the Second World War. The Germans formed a larger part of the local population with deep roots to the site. After their transfer there were only few locals left and other people were relocated here from all over Czechoslovakia. Another milestone was a rapid increase in large-scale brown coal mining and its subsequent combustion. As a result, the state of the environment began to deteriorate rapidly. The region was so polluted at the end of the 1980s that it was virtually ineligible to live there, and the locals began to strike against the Communist regime. The situation was also negatively impacted by collective redundancies from the mines and the influx of socially disadvantaged people for cheap housing, which increased unemployment. These events led to a reduction in the identification of the locals with the region. Compared to the Northwest, the Moravskoslezský region does not face such a strong heritage of weak identification with the place.<sup>5</sup>

In both regions, there is low qualification of graduates and the absence of technically-oriented fields due to the low level of education. On the other hand, there is low demand for graduates coming from university and vocational schools and they rather prefer to leave the region, which is further exacerbated by the absence of a relationship with the place.<sup>6</sup>

The economy of the regions is historically based on several large companies from the heavy and chemical industry. In case of the Moravskoslezský region there is also a strong position of the manufacturing industry. Weak support for business development and limited supply on the labor market make it impossible for small and medium-sized enterprises and companies to grow in alternative manufacturing or commercial services. New companies in the region are primarily focused on primary processing of resources without the link to higher levels of the production chain. Local industry is therefore characterized by low skills and low added value. Wages are therefore low and so the purchasing power does not increase.<sup>7</sup>

There are also no R&D capacities in the regions that could request support and subsequently contribute to the economic development of the regions and then transfer the knowledge and applications to the business sector. The relatively successful Technical University in Ostrava (Moravskoslezský region) is an exception. However, it is also not successfully linked with the private sector. Traditional companies in the regions have no incentive or opportunity to invest in cooperation with universities, innovation centers or science and research in general. Companies are more interested in direct participation in the qualifications of their future employees. In general,

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<sup>5</sup> [https://restartregionu.cz/content/uploads/2016/10/39509\\_ma\\_ST-RES\\_priloha1.pdf](https://restartregionu.cz/content/uploads/2016/10/39509_ma_ST-RES_priloha1.pdf)

<sup>6</sup> [https://restartregionu.cz/content/uploads/2016/10/39509\\_ma\\_ST-RES\\_priloha1.pdf](https://restartregionu.cz/content/uploads/2016/10/39509_ma_ST-RES_priloha1.pdf)

<sup>7</sup> [https://restartregionu.cz/content/uploads/2016/10/39509\\_ma\\_ST-RES\\_priloha1.pdf](https://restartregionu.cz/content/uploads/2016/10/39509_ma_ST-RES_priloha1.pdf)

corporate strategies do not include technical innovations of higher orders that would desire collaboration with universities.<sup>8</sup>

## Analyzes of statistical datas of the coal regions

Deficiencies of the coal regions compared to the rest of the country can be seen in number of indicators. The following table shows selected data for the whole country and the three coal regions.

		Czech Republic	Ústecký	Karlovarský	Moravskoslezský
Number of inhabitants (2017)		10 610 055	821 080	295 686	1 205 886
GDP per inhabitant (2016)		451 785	333 521	300 894	385 247
Average gross month salary (2016)		31 062	24 482	27 147	27 877
total increase of inhabitants per 1000	(2015)	1,5	-1,40	-0,30	-3,60
	(2016)	2,40	-1,80	-1,10	-2,80
	(2017)	2,90	-0,40	0,50	-3,30
Share of unemployment (for people in age of 15-64) (2017)		3,77	5,39	3,47	5,77
Number of employed inhabitants (2017)		5 221 600	385 200	149 600	581 400
Share of jobs in mining and quarrying (%) (2017)		0,75	2,2	3,9	2,8
Share of jobs in Electricity, gas, heat and power air conditioning (2017)		1	1,8	0,8	1,2
Maximum share of the coal industry in the number of jobs (2017)		1,75	3	4,7	3
Calculation of number of jobs in coal industry (including overall mining and energy industry in case of whole country)		91 378	11 556	7 031	17 442
Educational structure in % (2016)	The primary education	13,80	19,80	19,30	16,30
	The secondary education without graduation	33,90	36,50	37,20	35,70
	The secondary education with graduation	33,70	31,90	31,70	32,10
	The terciar education	18,50	11,40	11,70	15,30
Inhabitants per one doctor		254	273	238	235

<sup>8</sup> [https://restartregionu.cz/content/uploads/2016/10/39509\\_ma\\_ST-RES\\_priloha1.pdf](https://restartregionu.cz/content/uploads/2016/10/39509_ma_ST-RES_priloha1.pdf)

(2016)				
Average percentage of temporary incapacity of work (2017)	4,26	4,55	3,47	5,14
Number of occupational diseases (2016)	1278	47	10	438
Share of occupational diseases (%) (2016)	100	34,3	0,8	3,7
Guests in accommodation (2017)	20 001 000	592 462	1 259 417	896 742
Registered offences per 1 000 inhabitants (2017)	19,20	21,40	13,2(2006)	20,50
Share of people in execution (%) (2017)	9,70	18,08	17,45	10,87
Year-on-year increase in executions (2017)	3,40	8,80	10,30	1,20

Source: own compilation based on Czech Statistical Office, Mapaexekuci.cz and The National Institute of Public Health (NIPH)

The red numbers show where the situation is the worst, where the consideration is possible. Nevertheless, it is clear from the table that all the coal regions have considerably worse results than the average in the whole country in the selected topics.

Although the Ustecký region does not have the worst GDP, it has the lowest average wage. In all regions the number of inhabitants decreases, despite the fact that at the national level the total population is growing. In the matter of decreasing population, the most critical situation is in the Moravskoslezský region. Unemployment is the highest in the Ustecký region, with the Moravskoslezský region very close to its value.

The mining of coal and its combustion is the main occupational sector. It can be estimated that the coal industry in the regions makes 3% (respectively 4.7%) of jobs. By calculation based on this share of employment in the coal industry multiplied by the number of workers, it can be estimated that there are no more than 36 029 employees in all the three regions. It makes almost half of the employment in the whole country in the mining and energy sector.<sup>9</sup> Data from Czech Statistical Office separated only for hard coal and lignite mining says that the average employment in the whole country in this sector is 14 528.

Joint Research Center made a different estimation of jobs in coal-fired plants based on calculation of installed capacity multiplied by indicator. It says there is 3 600 direct jobs in coal-fired power plants in the whole country. Similar estimations were made also for coal mining jobs. In case of the Czech Republic there might be around 18 000 employees. Overall, there could be 21 600 jobs directly related to coal in the Czech Republic.<sup>10</sup>

NUTS 2	Location	Number of	Number	Total
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<sup>9</sup> In case of the whole country the results are not showing only coal industry but the whole mining and energy industry including for example RES.

<sup>10</sup> Alves Dias, P. et al., EU coal regions: opportunities and challenges ahead, EUR 29292 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-89884-6, doi:10.2760/064809, JRC112593

Region		Jobs in coal mines (operating)	Jobs in coal power plants	number of Jobs
CZ02	Střední Čechy	0	661	661
CZ03	Jihozápad	0	59	59
CZ04	Severozápad/ Northwest (Ústecký + Karlovarský)	7 869	1 862	9 731
CZ05	Severovýchod	0	550	550
CZ08	Moravskoslezský	10 131	423	10 554
	Total	18 000	3 555	21 555

Source: Alves Dias, P. et al., EU coal regions: opportunities and challenges ahead, EUR 29292 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-89884-6, doi:10.2760/064809, JRC112593

Joint Research Center made an estimation also for indirect jobs while 10 018 employees should be from the region and another 19 229 in other regions. Another interesting figure is that in the Moravskoslezský region, 8,3 megatonnes of hard coal is produced in 3 underground mines. In the Northwest, 38,1 megatonnes of lignite is produced in 6 open pits.

<sup>11</sup>A realistic conclusion of direct jobs related to coal is 20 000 – 30 000 jobs. The EU Observer claims that the direct employment in renewables is 30 500 jobs.<sup>12</sup> With quite certainty we can say that there are no more people employed in the coal industry than in the renewable industry. On the other hand, the coal related jobs are concentrated in a few small parts of the country.

The job vacancy rate is as high as 5,4 in the Czech Republic at this moment. It is the highest in the European Union.<sup>13</sup> Despite the fact, that the average unemployment is also historically low at this moment, there are still 4 regions where there are more unemployed people than available jobs. Ústecký and Moravskoslezský regions are among them.

Significant difference between the two areas (Northwest and Moravskoslezský) is the way of mining and related character of workers. In the Moravskoslezský region there is a number of workers mining the coal underground and without the use of heavy machines. These workers have no specific education or skills usable in other industry. Therefore, they can be poorly employed for different but related kind of work. They require the proper requalification as was mentioned earlier. In case of the Northwest the character of jobs is different. Since open pit mining is made by machines there are no workers without qualification in a craft usable in other type of industry. Most typically there are mechanics, fitters, engineers etc.

Another important fact is that not all the workers working in the mines will be unemployed when the mines close. The reason is that after the closure of the mines the mining companies are obliged to make revitalisations of the areas which desire the very same type of a work and workers as for

<sup>11</sup> According Eurostat:  $JVR = \text{number of job vacancies} / (\text{number of occupied posts} + \text{number of job vacancies}) * 100$

<sup>12</sup> [https://www.eurobserv-er.org/pdf/renewable-energy-policy-factsheet-2018-czech\\_republic/](https://www.eurobserv-er.org/pdf/renewable-energy-policy-factsheet-2018-czech_republic/)

<sup>13</sup> <https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00172&plugin=1>

mining. And of course, it has to be counted with the fact that part of the workers will retire after the closing of the mines.

According to the estimation, there are 20 – 30 thousands of workers in 9 pits and related power plants. That would mean there are 3 000 workers per one mine and its powerplant(s). We can assume not more than half of them will be looking for job after the closing. The rest will work in revitalisations or retire. At this time, there are 14 200 unemployed people in the Ústecký region.<sup>14</sup> Closing one mine in the Ústecký region would generate approximately 7-10,5% of general unemployment (1 000-1 500 workers)

Regarding other data shown in the table, it is clear from the educational structure that all regions have a higher number of lower educated people and, on the contrary, fewer higher education graduates and university graduates. This fluctuation is significant especially in the Karlovarský and Ústecký regions . This specific structure of education is a result of historical developments. Heavy industries or manufacturing are the main employers in the region. They haven't search for many higher educated employees. Such development caused a specific situation on the job market which discourages entrepreneurs and companies from starting business in these regions. Higher educated employees therefore leave to other parts of the country or abroad.

While Ústecký region has the lowest number of doctors per population, Moravskoslezský region is the worst in the matter of occupational diseases.<sup>15</sup> They stand for over one third of all the cases which is the most in the whole country. Over half of the incidents made in this region are in the following areas of diseases: peripheral nerve diseases of the upper limbs from working with vibrating instruments, peripheral nerve disease from limb overload, umbilical pneumoconiosis with typical RTG traces of dust changes and measles. Decreasing the sickness rate would definitely save costs for the health care.

Regarding the number of crimes, the worst situation is in Ústecký region. This negative primacy is boosted by the fact that Ústecký is also the region where the most people are faced with execution. Situation in Karlovarský region is only slightly better but the situation is deteriorating fast. In case of Moravskoslezský region, the share of people in execution is also very high but the year to year increase is not so high so the situation could soon be stabilized.

## **RESTART programme - the governmental strategy for restructuralization**

In the beginning of 2017, a Strategic Framework for Economic Restructuralization of the Ústecký, Moravskoslezský and Karlovarský regions, Restart in short, was launched. The initiative for the creation of the Strategic Framework came from the three concerned regions themselves. They asked the government for a financial injection in order to restart their economies. As a result, the position of Government Plenipotentiary was established to develop a common strategy for economic and social restructuring. The Ministry for Regional Development conducted the initial input analysis and identified the largest structural problems and opportunities for improvement in the given regions. A

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<sup>14</sup> CSÚ

<sup>15</sup> [http://www.szu.cz/uploads/NZP/Hlaseni\\_NzP\\_2017.pdf](http://www.szu.cz/uploads/NZP/Hlaseni_NzP_2017.pdf)



general Strategic Framework was then developed, which forms the basis for the further Action Plans proposing concrete measures to deal with the structural problems of the coal mining regions.

The Government Plenipotentiary is responsible for the development of the Action Plans as well as the evaluation of the implemented measures. He or she manages the work of the executive team that coordinates the activities among the involved regions as well as the work of joint working groups that focus on particular pillars of the framework.

The Government Plenipotentiary together with the Regional Supervisory Board appoints leaders of the working groups, who subsequently name their members. Those represent municipalities, regional offices, the Office of Labour, the Agency for Social Inclusion, the business sector and NGOs.

The executive team coordinates the preparation of background materials, collects inputs from stakeholders and the public, investigates absorption capacities of the regions, communicates proposals from the regions to the ministries and working groups and through this also supervises the implementation of the outlined measures by ministries. Working groups evaluate the implementation of approved measures and suggest new ones to the Regional Supervisory Board.

The Regional Supervisory Board is formed by representatives of the region, the regional tripartite, the Union of Towns and Municipalities (and through that appointed towns and municipalities), university representatives, businesses and trade unions and other organizations such as the Association of NGOs. The Regional Supervisory Board approves draft Action Plans that are further developed by ministries. To finalise the process, Action Plans are being discussed at a Conference for Restructuring that happens at least once a year. Finally, the Action Plan is approved by the government.

The Strategic Framework entails seven pillars, which are common for all the involved regions:

- Entrepreneurship and innovation
- Foreign direct investments
- Research and development
- Human resources
- Environment
- Social exclusion and instability
- Infrastructure and the quality of public services

The Strategic Framework was approved on January 9, 2017, whereas the accompanying first Action Plan was approved on July 10 the same year. Every year, the Action Plan is renewed and its measures updated for the upcoming year.

The first Action Plan contains 65 measures divided into seven thematic priorities according to the pillars listed in the Strategic Framework. There is a clear imbalance in the allocated money for particular priorities. Although the budget for the pillar “Environment” makes up one third of the whole budget allocated for the Action Plan, the amount of additional money on top of the existing budget is small. This pillar contains almost exclusively measures to revitalise and regenerate the land after mining, which the government had promised to do anyway. The Action Plan, however, helps to emphasize this need and accelerates the whole process.

The second Action Plan was approved on September 4, 2018. It contains 27 new measures which complement or extend the ones from the first plan. Among them there are for example steps for adaptation to climate change and measures for cleaner air. Unfortunately, there is also financial support for coal power plants and for the construction of incinerators.

From an environmental NGO perspective, the creation of the Strategic Framework and the subsequent Action Plans is overall a step in the right direction. It is necessary to prepare the regions for the phase out of coal, which will inevitably happen due to the combination of declining coal prices, increasing competitiveness of renewables and increasing pressures on reducing emissions of greenhouse gases due to advancing climate change.

However, there are some significant shortcomings in the documents. First of all, the government never specifically mentions an explicit deadline for the coal phase out. Thus, the incentives to restructure the regional economy and make it less coal dependent are not as strong. Secondly, the current Action Plan includes many projects that would have been done anyway, even without the Strategic Framework being in place. Thus, the government misses a unique opportunity to take a step further. The document also lacks more progressive and innovative ideas, which could truly kick off a new stage for the regions. Bolder measures taken now would benefit the regions in the future.

Lack of public participation in the process of formulation of the Action Plans is also a drawback. There is an online tool available for citizens to submit their ideas, however, the results of this effort are not made public and nobody knows how many ideas were submitted and whether they have been considered. There was no public hearing or a structured public participation planning process.

Finally, the Action Plan does not provide a comprehensive scheme for supporting renewable energy sources, which could ultimately replace coal, both in energy production and employment. It includes potential analyzes of several sources but it lacks concrete steps for their implementation.

These shortcomings are significant and the future Action Plans should address them. Nevertheless, Restart is the only governmental strategy in CEE Europe for economic transformation of coal regions. The fact that such a strategic document exists in one of the most coal-reliant countries in Europe shows that it is possible to garner the necessary political support for phasing out coal and that it is more easily done when wrapped under the veil of regional development and restructuring.

## **Main problems and alternatives**

From the information above, it is clear that in the Northwest there is no clear vision of phasing out coal. The mines and coal power plants will likely operate till 2040 and there is even uncertainty about that since the limits on mining can be extended past 2050. Such a situation generates also a negative image of the region and ruins the potential of developing other industries.

Due to mining as well as several other reasons, there is a very bad social situation. Significant indicators are especially high levels of executions, weak educational structure and also unemployment which can be the cause as well as consequence. And the situation is rather worsening than improving.

As was already said, all the regions are quite heavily dependent on the coal industry and the development of other kinds of industries is limited with the exception of other heavy industries such

as for example the chemical industry in Ústecký region. Generally, there is a raising interest in renewables following the phasing out of the coal industry. The Czech Republic already met its 2020 goals for the share of renewables in 2014. Since then, there is no more growth of the share in the country because of the missing state support. A new sufficient state support could unlock new potential in renewables. Both of the coal areas have potential in wind energy thanks to local mountains.<sup>16</sup>In addition, there are options of renewables directly linked with open mines. Part of the revitalized area could be assigned for growing biomass. There is also a project studying the potential of creating pumped-storage hydroelectricity in the place of former mine.

Despite the fact there is the potential for renewables in the coal region, all the regions need also a rapid development in other alternative industries (such as tourism and other services) and SMEs. Such an investment can not only solve the threat of releasing miners but more generally the problem of unemployment in the region.

## Recommendations

Thankfully, coal regions in the Czech Republic already started their way to restructuralization. The main governmental tool is the Restart program . It has the power to bring tangible results since it can bring significant financial sources and it is supported by the state. The key point is to avoid such negative projects as support for coal power plants and incineration plants which do not help to the restructuralization of the region, worsen the environment and can discredit the whole program. Instead, the program should focus its measures on support of education, SMEs and other alternative economies and RES. The restructuralization needs to start in improvement of the social situation of the regions and educational structure. Hand in hand with that will come the improvement of the image and attractivity of the regions and the rise of the job offers.

On the other hand Czech coal regions have been not able to get as much finances from funds as other regions. Center for Transport and Energy (CDE) is going to release an analyze of receiving EU funds in Ústecký region. The analyzed data shows that the region is the second worst regarding the amount of funds per capita. The only worse region is Prague which is not supposed to be getting as much funds as the rest of the country. In next step, CDE will make a reasearch to find out what are the barriers in the region for requesting donations from EU funds. The issue of EU funds going to the coal regions is discussed also on the EU level. There are debates about ways how to ensure that funds will support former workers and local communities<sup>17</sup>. For successful implementation of the transformation it is necessary to adjust future EU funds to the needs of the weakest regions and build a cohesive strategy across the various financial instruments of EU.

Nevertheless, there is no other way to define the right measures for the improvement of the region than by detailed and proper participation. Such participation needs to involve all types of stakeholders and give a space to open public discussion where the public interest can be formulated. Restart should not take the burden of interpreting the requirements of people by itself. Moderated public discussion should lead to the right conclusion of what all agree is the best and feasible to do in

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<sup>16</sup> [http://www.hnutiduha.cz/sites/default/files/publikace/2015/03/analyza\\_vetrne\\_energetiky.pdf](http://www.hnutiduha.cz/sites/default/files/publikace/2015/03/analyza_vetrne_energetiky.pdf)

<sup>17</sup> More at: [www.e3g.org/library/funding-just-transition-net-zero-economy-in-europe-opportunities-eu-budget](http://www.e3g.org/library/funding-just-transition-net-zero-economy-in-europe-opportunities-eu-budget)

the given situation. All in all, more finances should be invested especially in proper participation. The topic of participation of communities in transformation processes in coal regions was addressed also by Coal platform which connect different actors from the coal regions and encourage for implementing of transformations.

## **Conclusion**

There are three coal regions in the Czech Republic. All these regions perform poorly in number of indicators defining well-being of the locals. Their levels of GDP and disposable income are below the national average, their unemployment rates are among the highest and their quality of air among the lowest. The fact that most of the employment and production is concentrated in the hands of a few large mining companies does not alleviate the situation. On the other hand, the critical situation of the regions is already addressed by a governmental program Restart which is supposed to help the economic restructuralization and contains improvements also in environmental and social areas.

The energy mix of the Czech Republic is very dependent on coal. The analysis comes up with a safe estimation that there are 20 000 – 30 000 workers directly employed in coal mines and coal power plants. Since the closing of the mines will be continuous, there should never be more than 1 500 of unemployed workers as a result of the closed mines at the moment.

Renewables create some potential of new jobs in the regions but it should definitely not be seen as the only replacement. There is a need to develop also other industries which can also create many new jobs. The key thing in developing of the regions and preparing for the future releasing of employees from coal industry is the improvement of educational structure and social situation. It will improve image and bring more investors and companies from alternative industries to the regions.

At this moment, there is no better way how to realize the development than through the measures implemented by Restart. But it needs to be ensured that Restart will deliver the transformation based on public consultation.