

## Coal transition: Status quo and outlook

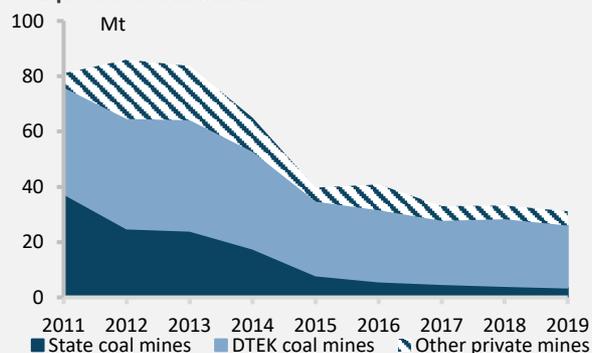
Ending the mining and use of coal is a challenge that Ukraine, too, will have to face in the coming years. Compelling ecological and economic reasons exist. Using coal for power generation and steel production leads to high CO<sub>2</sub> emissions. At the same time, mining domestic coal in Ukraine is uneconomic due to unfavourable geology. Especially state-run mines operate at high losses and, despite large subsidies, only produce marginal amounts of coal. Germany and other international partners agreed to support Ukraine in its coal transition, the process of ending the mining and use of coal and reorientation of regional economies. First pilot projects have already been identified.

The transition will be a challenge especially for the coal regions in the West and East of Ukraine. Many mines are in “monotowns” without other substantial economic activities and several mining towns are located near the conflict areas in the Donbas. Nevertheless, the process of coal transition also creates economic opportunities ranging from fiscal savings to opportunities for renewed regional economic growth in modern economic sectors. To fully reap the ecological benefits, including private mines and user sectors of coal in the transition process will be vital.

### Coal production on the decline

The coal deposits in the Donbas and Lviv-Volyn coal-fields once were a mainstay of Ukrainian industrialisation. Along with the iron ore deposits they permitted the creation of a steel industry and generation of power from coal. In recent decades, coal production has been on the decline, however. It reached its peak during the 1970s with more than 200 megatons (Mt) per year. Since the demise of the USSR, coal production first fell to a level of around 80 Mt per year. After 2013, another drop to the present level of around 30 Mt per year took place.

Coal production in Ukraine



Sources: Berlin Economics, Heinrich-Böll-Foundation, Razumkov Centre

Clearly, the loss of mines in the non-controlled areas in Donbas played a key role in the most recent drop. Nevertheless, geological reasons are behind the long-term decline of coal mining in Ukraine. Coal layers are only between 70 cm to 1.20 m thick and the sulfur content of the coal is relatively high. Combined, such characteristics give rise to high costs of mining and low sales revenues from domestic coal, hence leading to mining being relatively uneconomic.

### The crisis of state-operated mines

State-run mines in particular are in deep crisis. During the privatisation rounds after the end of the USSR, private investors rented and took over the operation of the best mines only. Now, roughly 70% of present annual mining volumes are produced by mines operated by DTEK, an energy company owned by Rinat Akhmetov. Mining in state-run mines basically collapsed since 2011.

### Production and employment in coal mining

	Private mines	State mines
Number	17	27
Production volume, Mt	27.7	3.8
Share	87.9%	12.1%
Employment, Tsd.	47.6	37.9
Share	55.7%	44.3%

Sources: Energy Ministry of Ukraine, Berlin Economics, 2019

In 2019, state-run mines only produced 3.8 Mt of coal, 12% of total production volumes in Ukraine. At the same time, they still accounted for 44% of employment in coal mining. Due to this unfavourable constellation, state mines are highly deficitary, requiring substantial annual subsidies, which amounted to UAH 4 bn, roughly EUR 140 m in 2019. However, coal mining in private mines also is considered to be hardly competitive compared to importing coal or using other energy sources for power generation.

### Ecological and economic reasons for transition

In the coming decades, Ukraine will have to end mining and using coal for ecological and economic reasons. In 2018, coal accounted for more than half of Ukraine’s total CO<sub>2</sub> emissions with 98 Mt of CO<sub>2</sub>. Out of these, 63 Mt were created by power generation from coal. The other 35 Mt were largely emitted by the steel industry. In order to reduce CO<sub>2</sub> emissions, Ukraine will need to reduce its consumption of coal. In the short to medium term, the main contribution will have to come from reducing coal power generation as CO<sub>2</sub>-neutral methods

of steel production yet have to reach technological maturity.

Economically, the fiscal cost of subsidies to state-run mines are the most obvious reasons for ending coal mining. Less clearly quantifiable but even more important, however is that using domestic coal as a source of power is too costly compared to other sources of power and can only be maintained by implicit subsidies such as high wholesale prices for power.

#### Transition has begun

At the beginning of 2020, the Ukrainian Cabinet of Ministers founded a coordination council and announced a strategy for the transition of the coal sector. Germany, in the framework of the Energy Partnership with Ukraine that was signed in 2020, offered supporting Ukraine in this process. Initially, two mines in the West (Chervonohrad, Lviv Oblast) and East (Myrnohrad, Donetsk Oblast) have been identified as potential pilot projects for mine closures. Other international partners of Ukraine also stand by to support the transition process.

#### Challenges for the regional economy

For the present-day coal regions of Ukraine – Donetsk and Luhansk Oblasts in the East and Lviv and Volyn Oblasts in the West – transition will not be easy. Especially replacing mining jobs will be a major challenge. Locally, the mining sector often accounts for more than 50% of jobs outside of public administration. Closing the mines in monotowns that have grown around them without ensuring the growth of new economic activities would put the entire local economic structure at risk.

Risks are especially high in the Donbas. In Donetsk Oblast, state and private coal mining still accounted for 22% of Gross Value Added in 2018. The regional economy remains highly focused on the steel and coal sectors. Due to the proximity to the conflict area, private investments will be hard to attract. In the West, Lviv Oblast for instance is less prosperous, but rests on a broader economic footing, boasting for example a highly successful IT industry. Nevertheless, ensuring that mining towns participate on growth that mainly takes place in the urban centres of the Oblasts will be a challenge in the West, too.

#### Opportunities in transition

Despite all difficulties, the great opportunities for coal regions inherent in the transition process should not be overlooked. In the medium term, former miners could be much more productive in other, more economically sensible sectors, at better and much safer conditions of work as Ukraine's mining sector is notorious for its highly hazardous working conditions. The growth of new industrial agglomerations could also

give rise to a sustainable and positive economic dynamic for the regions.

In order to exploit these potentials, strategies for transition must be developed for each region in concert with all involved stakeholders. These strategies should identify strengths and weaknesses of the regions, identify promising sectors in the context of a "Smart Specialisation Strategy" approach and, on that basis, develop implementable policy measures ranging from re-training of workers to investment attraction measures.

#### Outlook

With international support, Ukraine should be able to proactively shape the necessary transition process. Ending explicit and implicit subsidies for coal mining will strengthen Ukraine's economy in its entirety. In order to also fully reap the ecological benefits and fulfil existing international commitments of Ukraine to reduce CO2 emissions, both the privately run coal mines and coal power generation should be integrated in this transition process.

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