

[CCNT • Policy Brief]

Achieving Just Transition in China's Coal Resource-based Regions

/ iGDP / Jul. 2023



Author

YANG LI Research Director, Institute for Global Decarbonization Progress
Email: yangli@igdp.cn

Disclaimer

The content of this report represents the authors' personal understanding and views, and is intended to enhance discussion and communication in relevant fields. It does not represent the position or views of the report's supporters, the authors' affiliated organizations, or the research experts and scholars consulted during the report's preparation. The data and information used in this report are all publicly available. The authors are solely responsible for any errors or omissions.

Suggested Citation

YANG LI. Achieving Just Transition in China's Coal Resource-based Regions. 2023. Report. Beijing: Institute for Global Decarbonization Progress.

For China to meet its dual-carbon goals, its coal resource-based regions will have to transition away from coal as the dominant local industry. This complex task will impact the local economy, the energy sector, the natural environment and society. Ensuring a just transition will need to address four key areas: high-quality economic development, people's livelihoods and security, clean and safe energy, and environmental protection.

»» High-Quality Economic Development

Just transition requires that coal resource-based regions diversify their industrial structure and enhance economic resilience. These regions' historical reliance on the coal industry has stymied development of other sectors and undermined their economic resilience. The major coal-producing province of Shanxi, for example, has seen cyclical economic growth and decline, with periods of surging coal prices and coal industry prosperity (and slower economic growth in other sectors), followed by periods of declining coal prices and coal industry stagnation, leading to deceleration in economic development.

In 2017, Shanxi's coal mining sector accounted for over 40% of its industrial added value. However, its influence and sensitivity coefficients ranked 24th and 37th, respectively, among the 42 sectors in the region's economic framework.

Green and low-carbon transition in China's coal resource-based regions should be guided by future trends and the principles of industrial development. Regions should also play to their local strengths (i.e., land and energy resources) to facilitate their transitions. A comprehensive "two-pronged" strategy is often applied during such transitions, drawing on domestic and international experiences.

The first stage involves introducing smart, green technologies to the existing coal industry. This means changing the current production capacity of coal mines and making them more green, more intelligent, unmanned, intensive, and flexible. It also means shifting from a labor-intensive model to one that is high-tech and capital-intensive.

Progress in this stage depends on the type of coal resources available in certain regions and whether industrial chain upgrades are necessary. Upgrades involve moving from raw material extraction and processing industries toward integrating coal with electricity, modernizing the coal chemical industry, adapting coal-based materials and manufacturing high-end equipment. These measures extend the reach of the industrial chain and add value to the industry.

During the second stage, regions leverage their resource advantages and favorable policies are introduced at both a national and local level, thereby enhancing the market environment. This approach is aimed at nurturing and developing renewable energy and green, low-carbon industries that can be symbiotically integrated within the coal sector. In areas where there are abandoned mines, the focus is on utilizing the existing land, i.e. coal mining subsidence areas and abandoned coal mine roadways, to create space for new energy sectors. Wind power and photovoltaic power plants are established, and energy storage facilities are built through reservoirs. Additionally, efforts are made to proactively lay the foundation for research and development in emerging industries, i.e. the new energy and hydrogen sectors.

»» Livelihoods and Security

Just transition in coal resource-based regions also requires policies to ensure that residents have stable and secure employment opportunities as well as elevated living standards. This necessitates the establishment or enhancement of a multi-tiered social security and employment support framework that encompasses government, local businesses and workers. This can mitigate the risk of job opportunities being lost and prevent vulnerable groups from falling into poverty. Ultimately, the goal is to achieve both environmental protection and economic security.

Structural adjustments aimed at curbing excess coal output have led to a decline in employment opportunities for workers in related industries. To maintain social stability workers who experience employment disruption need to be smoothly resettled, local employment opportunities need to be arranged, and workers need to be relocated.

As described in the report "*Equitably Transforming the Coal Industry with Supply-side Structural Reforms*," released by the China project Research on Programs and Policies for Control of China's Total Coal Consumption, coal resource-based regions have introduced a number of strategies for resettling workers. Schemes include transferring workers internally, offering retirement packages, offering compensation to laid-off laborers, and supporting workers with re-employment. However, the report stresses that there are numerous challenges in enterprise-led employment placements. There are inconsistent salary standards for prospective retirees, unsustainable approaches to resettling employees, and few effective ways of offering employment to workers' children. There are also few robust training mechanisms to produce multi-skilled employees. Additionally, effective insurance policies to support workers who are changing jobs are lacking. Insufficient attention to these challenges could lead to suboptimal or unsustainable outcomes.

Coal resource-dependent regions need to find a balance between ensuring energy security and implementing green and low-carbon initiatives. Local governments should factor vulnerable people's livelihoods and employment security into their macroeconomic monitoring and assessment frameworks. The central government and industries where coal consumption is a high-priority should ensure that platforms are in place that provide support to people during the transition period. They should provide extra funding to coal-rich areas and implement special policies to support local coal workers, so that employment and welfare does not suffer in the event of sluggish economic growth and reduced fiscal revenue.

Governments at all levels should enhance their policies to support the livelihoods and employment status of residents in coal-rich regions. They should establish a social security system that facilitates labor mobility and flexible employment. As they pursue sustainability, the coal industry and relevant enterprises should make it a basic condition that employees are placed in jobs and assured welfare. At the same time, workers should actively seek to be trained in diverse vocational skills, and be open-minded when it comes to employment, embracing flexible work arrangements.

» Clean and Safe Energy

Coal resource-based regions in China play a vital role as national energy bases. In order for the country to realize its strategic goals of ensuring energy security and mitigating climate change, regions need to determine their coal production capacity, assess changes in coal demand, and develop a structured plan for the phased withdrawal of coal resources. These measures will ensure that coal supply is compatible with national demand and prevent any short-term energy supply gaps.

However, coal resource-based regions need to face up to the fact that coal demand is declining in the long run. They should take proactive measures to mitigate the negative impacts of this trend, not only on the local coal industry, but on the regional economy and wider society.

According to the report *"Research on China's Long-Term, Low-Carbon Development Strategy and Transformation Pathways,"*¹ published by Tsinghua University's Institute of Climate Change and Sustainable Development, coal will remain the primary energy source in China until 2030. However, the share of coal consumption will fall to below 43% by that year (in 2021 the share of coal consumption was 56.8%). After 2030, coal consumption will continue to decline, and by 2050 the share of coal consumption is projected to fall to around 9%. Non-fossil fuel energy sources will gradually replace coal as China's primary energy source.

In order for there to be a smooth transition, coal resource-based regions will need to strategically optimize their existing production capacity and gradually reduce it, while ensuring that they continue to meet the nation's energy demand. Industrial policies to reduce capacity, ensure safe production and protect the environment will affect the capacity and output in these regions.

¹ Institute of Climate Change and Sustainable Development, Tsinghua University, et al. (2021). *Research on China's long-term, low-carbon development strategy and transformation pathways*. Beijing: China Environment Publishing Group.

To address this, coal-rich regions should holistically consider their local resources, the environment and coal conditions. They should establish dynamic mechanisms at local coal mines and adjust production capacity in response to emergencies. Mechanisms should take into account more advanced production capacity, actual production capacity, transportation factors, and shifts in demand. Regions should then be able to dynamically adjust their scale and intensity for coal output accordingly.

Coal resource-based regions should develop a comprehensive blueprint for systematically phasing out coal mining. They should also create a robust compensation mechanism to facilitate those changing industries. This will help to mitigate potential economic and social impacts as the coal industry declines.

These regions should assess their local resources and provide a mixture of energy resources, including coalbed methane, shale gas, solar power, hydropower, and biomass. Regions can work together to provide an integrated energy supply chain, thereby gradually transitioning from being coal-centric supply bases to multi-energy supply hubs.

»» Environmental Protection

Environmental protection and governance paradigms in coal mining regions should shift towards being "dual-carbon." Major coal regions are facing severe ecological degradation and formidable challenges in governance due to long-term coal mining. Over the past two decades, coal mining has devastated some 1.8 million square kilometers of land resources, causing harm to the natural environment and a decline in ecosystem carbon sequestration capacity (He Zhenjia et al., 2022).²

In China's coal mining areas, "ecological restoration" means prioritizing the ecological environment and restoring the functions of the ecosystem. However, as there are no consistent criteria nor specific content requirements, the governance and

² He Zhenjia, Luo Lintao, Du Yichun, et al. (2022). Countermeasures to realize ecological restoration and emission reduction and increase of sinks in mining areas under the background of carbon neutrality. *Multipurpose Utilization Mineral Resources*, 79(2): 9-14.

approaches to restoration in mining areas are often simplistic. This is the case with environmental pollution controls, land reclamation, topographical reshaping, soil reconstruction, and vegetation renewal.

Coal-rich regions and local coal mining areas should integrate "dual-carbon" concepts into their definitions of "ecological preservation and rehabilitation."

To mitigate climate change, coal-rich regions should focus on repurposing land for projects like wind and solar power plants. Coal mining subsidence areas and abandoned mines should also be ecologically restored. Abandoned coal mine shafts can be utilized and turned into water storage and compressed air energy storage stations. All of these schemes would mean that renewable energy resources are being utilized.

Qualified areas of coal mining subsidence land can be transformed into natural wetlands. To enhance natural carbon sink capabilities, green spaces and woodland can also be restored to increase the number of ecological carbon sinks in coal mining areas.³

Similar practices have already been adopted in several resource-depleted regions in China. The Intercontinental Shanghai Wonderland Project (also known as the Shimao Quarry Hotel), the Xiaoqinling Gold Mine National Park in Shaanxi's Tongguan, the Huangshi National Mine Park, the Yingcheng National Mine Park in Hubei, the Huaxiacheng Mine Restoration Project in Weihai, and the Anguohu National Wetland Park in Pei County, Xuzhou (formerly known as the Zhangshuanglou Coal Mine subsidence area), exemplify such initiatives.

In the future, coal-rich regions and coal mining areas will face increased demand for environmental governance, ecological restoration and comprehensive land improvement projects. To meet these demands, it is essential that relevant regions establish a "dual-carbon" goal-oriented approach that is based on local conditions. This approach involves repurposing abandoned coal mines and land in subsidence areas for green, low-carbon projects.

³ Bian Zhengfu, Yu Haochen, Han Xiaotong. (2022). Solutions to mine ecological restoration under the context of carbon neutrality goals. *Journal of China Coal Society*, 47(1): 449-459.

Additionally, coal-rich regions should draw up robust legal and regulatory policies on environmental protection and geological restoration. There should be a supervisory mechanism and a unified environmental monitoring system at provincial, city, county, and enterprise-levels. During expansion, investment and financing channels should follow government guidance, support relevant projects, share revenue, and work together to combat risks.⁴

⁴ Li Gang, et al. (2019, 2022). Summarizing the experiences of the Pan'an Lake wetland park construction site and comprehensively improving subsidence areas[EB/OL]. 01-02-2019, 05-11-2022. http://www.qunzh.com/jdfc/jcck/202010/t20201030_72806.html.