

Bridging the Gap for Coal Region Just Transition

The Future of Coal Region Study Group

West Virginia Field Trip Report

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Authors

This report is collectively written by the following members of “The Future of Coal Regions” study group convened at the Harvard Kennedy School in Spring 2023: Irshad Ali Sodhar, Johanna Schwarz, Michael Reschke, Hannah Mae Merten, Kelsey Landau, M.C. Abbott, Ryosuke Shimizu, Nomko Baatar, Poorva Kaushik, Akriti Bhargava, Jyoti Sharma, Keita Matsumoto, Weila Gong, and Yingxia Yang

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Executive Summary

This is a report for The Future of Coal Regions study group, co-sponsored by the Malcolm Wiener Center's Reimagining the Economy Project and the Belfer Center's Environment and Natural Resources Program, designed for Harvard students to learn and share knowledge about the challenges facing coal-producing regions, to identify opportunities for overcoming these challenges, and to foster connections and collaborations between students, faculty, and affiliates. During the Spring 2023 semester, the study group undertook a trip to West Virginia where they met a range of stakeholders to understand local implications of the energy transition. This report summarizes their key takeaways from the trip and recommendations for policymakers and the Harvard community.

The trip, led by former West Virginia Secretary of State Natalie Tennant and Yingxia Yang (MC/MPA 2023), included a tour of the Beckley Exhibition Coal Mine, a visit to a United Mine Workers of America (UMWA) career center, and conversations with community leaders, including House of Delegates member Todd Kirby (R) and representatives from local non-profits Fruits of Labor and the West Virginia Community Development Hub (The Hub).

The tour of the historic underground coal mining site and conversations with coal miners helped the group contextualize the dangerous, difficult working conditions of coal mining sites and appreciate the work ethic and sacrifice of coal miners. Despite generations of disinvestment and resource extraction, miners have a strong sense of pride in the quality of work, perseverance, and collective resilience, creating a shared identity among West Virginians.

Despite this pride in "Coal Country," coal miners and State Delegate Todd Kirby expressed concerns about job security due to declining coal production and the global transition to alternative energy sources. They recognized the need to reduce reliance on fossil fuels and acknowledged the importance of labor market diversification, as well as retraining and education programs to transition to new industrial sectors.

U.S. policies to re-establish a domestic supply chain present unprecedented opportunities for West Virginia to move to a clean energy future. The state has made progress in diversifying its economy, successfully attracting some investment in non-coal industries such as battery and steel manufacturing. Innovative, community-based approaches to economic development practiced by Fruits of Labor and The Hub provide models for cross-sector collaboration between government, industry, and community organizations to develop a sustainable economy.

However, several barriers to developing alternative industries in West Virginia persist:

1. Despite the recent flush of incentives, the complexity of federal programs makes it difficult for local policymakers and communities to understand what programs are available and how to access them.

2. West Virginia's lack of highly educated and skilled workers may discourage businesses from investing. At the same time, miners may not be willing to leave the coal industry due to reduced wages and lower standards of living offered by alternative jobs.

A lack of coordination and collective action among local stakeholders exacerbates these challenges and transition efforts. Based on what we learned on the trip, the study group provides the following recommendations to policymakers:

1. Reframe the transition away from coal as a new era of economic opportunity. Centering discussions on climate change is politically polarizing and can hinder progress on economic and labor issues.
2. Augment local capacity to implement new economic development programs.
3. Strengthen the federal social safety net for coal miners, including programs such as universal healthcare, universal childcare, and subsidized or public housing. Such programs can offer individuals the necessary breathing room to take career risks and switch industries.
4. Invest in local education to prepare the next generation of West Virginian workers.

Finally, we also provide recommendations to Harvard for leveraging its educational and research resources to help West Virginia and other coal regions:

1. Establish a research program focusing on just transitions in fossil fuel regions to coordinate cross-disciplinary research efforts across the university.
2. Develop scholarships or fellowships for local policymakers and community leaders for leadership development and economic and policy knowledge enhancement.
3. Teach the topic of coal transitions as part of courses on economic policy and establish a year-long study group dedicated to coal transitions.
4. Build community-directed technical assistance programs for transition communities.
5. Conduct strategic analyses of the challenges and opportunities facing specific coal regions and partner with community organizations to develop strategic plans based on those analyses.
6. Strengthen the Appalachia-to-college pipeline with youth development programs.

1. Takeaways from the Visits to Beckley Exhibition Coal Mine and Coal Miners

During the tour of Beckley Exhibition Coal Mine, our group was struck by the physical intensity of coal mining work. Coal is mined by following coal “seams,” or deposits, that are surrounded by other types of rock. While some seams are over six feet tall, other seams can be as shallow as 30-36 inches. Because it is uneconomical to excavate beyond the height of the seam, miners spend their 9- to 12-hour workdays navigating dark underground spaces, often with only 36 inches of clearance, at a crouch or crawl. Memorably, our tour guide explained that miners do not leave the mine to use the bathroom and will relieve themselves from a lying-down position if necessary. In addition, miners face various hazards such as explosions, cave-ins, and poisonous gases. We came away with the understanding that coal mining is literally back-breaking work.

The visit to the mine also illustrated how **new technologies are changing mining practices and influencing employment opportunities.** On one hand, technological advancements in coal mining have led to substantial improvements in safety. For instance, miners can remotely operate certain machinery, reducing the risk of accidents. On the other hand, modern technology has made it possible to automate various mining processes, diminishing the need for manual labor. As mining technologies continue to improve, employment opportunities in the industry will decline further.

Understanding the physical demands of coal mining helped contextualize the deep ties between the coal industry and West Virginians’ sense of pride and identity. During our conversations with miners, they spoke about the work ethic, commitment, and camaraderie fostered by their difficult, dangerous working conditions. Another point of pride is the historical importance of coal mining to U.S. growth and prosperity. It was Appalachian coal that became the steel that built American manufacturing prowess. For some miners and community members, the United States would not have become a global power without the physical, environmental, and financial sacrifices made by West Virginian coal miners and mining communities. Coal mining is not merely an industry, but a collective identity, which may present significant cultural barriers to the energy transition.

Miners’ strong attachment to coal mining also positively influences their views of the industry’s future. Despite declining coal production and the global shift toward renewable energy sources, many of the miners we spoke with expressed optimism about coal mining’s prospects and a belief that demand for coal would continue.

However, coal miners also expressed concerns about job security due to the uncertainty and volatility characterizing the coal industry. They acknowledged the importance of retraining and education programs for transitioning to new sectors but voiced apprehension about potential downsides, such as reduced wages and lower standards of living in alternative jobs. There was also tacit acknowledgment that other career paths could yield a better future: for instance, our tour guide at Beckley Exhibition Coal Mine, a lifelong miner

and mine inspector, told us how he sent his three children to college to pursue careers outside of mining.

Our visit to the United Mine Workers of America (UMWA) career center helped us unpack some of the challenges associated with training. Here we heard from the union leaders and staffers who run the facility. The career center provides dual training: (1) helping those seeking to join the coal industry learn the necessary skills, and (2) helping to re-train those seeking to leave the coal industry (or who have been laid off from a mine in an economic downturn).

The foremost challenge that the career center faces is funding, with one leader noting that there is no shortage of workers seeking to be trained or retrained. The career center receives most of its funding from the federal government via competitive grants, but the UMWA leaders advocate for a multi-state funding solution (rather than the current site-by-site status quo) that would level the playing field for resources received by coal miners who live in different states.

2. Takeaways from the Discussion with the Lawmaker

The discussion with Delegate Todd Kirby (R), a state delegate for West Virginia District 44, was an important opportunity to hear a political perspective on West Virginia's approach to adapting the economy to the energy transition.

Kirby championed an "all of the above" approach to West Virginia's changing energy portfolio, emphasizing that while the state should incorporate renewable sources of energy in its energy infrastructure, traditional sources of energy like coal and natural gas will continue to play an important role in the state's economy and cultural identity. **This means that even in West Virginia, where the coal industry is concentrated, lawmakers are beginning to recognize the need to reduce reliance on fossil fuels.** Underlying this recognition may be West Virginia's many years of economic stagnation and the overall decline in demand for coal. While the coal industry remains important to local politicians, its economic importance has continued to decline. In fact, in West Virginia, severance taxes from the coal industry are now less than those from the natural gas industry. In this context, there appears to be a gradual recognition that attracting new growth industries is necessary to revitalize West Virginia's economy, and that decarbonization-related industries could be one of them.

However, there are challenges to attracting such industries. Kirby discussed his concerns about state subsidies for a renewable energy project in West Virginia. He referenced the Form Energy Battery project, which was recently approved for construction and operation in northern West Virginia. The project secured about \$250 million from the state of West Virginia, in addition to about \$750 million of private investment. Kirby was apprehensive about the amount of state funds invested in Form's project without access to reliable projections of the benefits of this project. One suggestion Kirby offered was to have project developers provide a briefing on the project directly to the state lawmakers (in addition to

the information and briefings provided to the relevant state regulators and agencies). Lawmakers lack the resources and expertise to understand what federal incentives are available, the commercial viability of the companies to be in West Virginia, and the impacts and risks of certain government policies (e.g., tax incentives) on the economy.

3. Takeaways from the Discussion with The Hub and Fruits of Labor

The Hub and Fruits of Labor are organizations that work on community development initiatives in West Virginia. The Hub provides coaching to community leadership teams to enable them to play a role in rural development and aims to grow the economic development ecosystem through collaborative partnerships to address systemic challenges for rural development. For example, they help community teams to redevelop and repurpose downtown shopfronts that have fallen into disuse. They also provide training and support to community leaders on how to access federal funding.¹ Fruits of Labor runs a Farm-to-Table agricultural training program that provides training to adults who are recovering from addiction, in addition to running prevention programs directed at youth across the region.² Their actions demonstrate the transformative power of providing vocational training, promoting sustainable economic development projects that will persist beyond the potential end of the region's coal industry.

The conversation with The Hub and Fruits of Labor underscored the importance of cross-sector collaboration between government and community organizations to build successful and lasting economic and social improvements. While the government provides the funding directed at economic innovation, the effective use of these funds relies on trust-building and community engagement.

Communicating effectively with coal communities about the transition is a delicate task. Conversations about climate change and the future outlook of the coal industry with coal communities in West Virginia are inherently challenging. In order to still work with coal communities effectively to address the challenges associated with the energy transition, community workers highlight the importance of tailoring discussions surrounding climate change and resilience in ways that resonate with the community, promoting a better understanding of the underlying issues; while climate change is a global issue, it ultimately affects communities, and this framing is far more useful and salient.

4. Opportunities and Challenges for West Virginia

West Virginia's "all of the above" energy approach opens possibilities to develop the alternative clean energy industry and helps its economic development. Even though clean energy reduces coal demand and employment, it contributes to economic development and additional tax revenues to support the government spending needs for these communities. The Inflation Reduction Act provides extra tax incentives to energy communities that are

¹ <https://wvhub.org/>

² <https://www.fruitsoflaborinc.com/>

low income and fossil fuel dependent, which will help boost West Virginia and other fossil-fuel-dependent regions' competitive advantage to develop new businesses in the emerging clean energy sector.

U.S. policies to reshore manufacturing and re-establish domestic supply chains may create economic development opportunities for West Virginia. The Form Energy battery manufacturing plant and Nucor's steel manufacturing plant are two such examples. Form Energy, a technology company developing and commercializing a new long-duration energy storage system, is building a manufacturing plant with up to \$760 million in West Virginia, which will employ at least 750 people when operating at full capacity. Nucor, a world-leading steel manufacturing company, is investing \$3.1 billion to build a new steel mill in West Virginia to produce 3 million tons of low-carbon steel annually. It will employ approximately 800 full-time employees after it begins commercial operations. Critical minerals mining could create new opportunities for coal miners with transferable skills. In general, manufacturing jobs are labor-intensive compared to clean energy jobs and could be more effective for solving the state's unemployment issues.

There is a lack of resources, expertise, and capability at the state and local level in West Virginia necessary to leverage federal funding to attract businesses. The availability of federal funding does not automatically result in economic development. Before coal communities can benefit from such programs, they need to understand what federal incentives are available to them and file grant applications. But in West Virginia there seems to be a lack of resources and expertise to do so. Moreover, as Delegate Kirby noted, when negotiating with businesses who are interested in investing in West Virginia, officials struggle to understand the commercial viability of the companies, the impacts of government policies (e.g., tax incentives) on the economy, etc. Without such expertise, the intentions of federal incentives and fundings may not be materialized in coal regions.

The lack of a skilled, highly educated workforce may discourage businesses from investing in West Virginia. The decline in the coal industry has made it harder for the government to invest in infrastructure and human capital, which in turn makes the state less attractive for new businesses. Competition from other states such as Pennsylvania and Ohio makes this problem even more challenging. Additionally, coal miners may not be willing to switch away from coal mining due to reduced wages and lower standards of living offered by alternative jobs, even though these alternative jobs provide better safer and healthier working conditions than mining.

West Virginia's success in the transition requires coordinated effort among stakeholders to effectively address the challenges and diversify the economy. However, different stakeholders in West Virginia hold very different views on the clean energy transition. Despite the large coal demand reduction and unemployment in the past decade, certain stakeholders, such as coal miners, the union, and lawmakers, still expressed optimism regarding the industry's future, which potentially hinders the processes of economic development. They may still politically be vested in keeping coal around and resist clean

energy development and do not appreciate the urgency for the need of economic diversification and job retraining. A bridging leadership to build consensus among different stakeholders is critical to overcome local resistance to change.

5. Recommendations to Policymakers

We provide the following recommendations to policymakers and community leaders seeking to facilitate the clean energy transition in West Virginia and other coal regions:

First, reframe the transition away from coal as a new era of economic opportunity. In an increasingly divided country, centering discussions on climate change is politically polarizing and can hinder progress on economic and labor issues. We heard that, at the end of the day, West Virginians want a decent life for themselves and the opportunity to thrive for their children. The transition to a clean energy economy can and should be framed as one with sustainable, meaningful economic growth opportunities for coal regions.

Second, augment local capacity to implement new economic development programs. The trifecta of the Infrastructure Investment and Jobs Act, the CHIPS Act, and the Inflation Reduction Act offer a once-in-a-lifetime policy window to advance economic opportunity in fossil fuel communities. Yet few people in the communities we visited were aware of the incentives and opportunities provided by this legislation, and those that are aware often lack the technical expertise required to compete for these opportunities. Proactive technical assistance from grant-making entities and philanthropic organizations can help coal communities access federal funding and incentives.

Third, strengthen the federal social safety net. Economic precarity prevents coal workers from transitioning to new careers: there is no room for taking risks when one is barely making ends meet. Safety net programs - such as universal healthcare, universal childcare, and subsidized or public housing - offer individuals the necessary breathing room to take career risks. In West Virginia, safety net programs find support from both Democrats and Republicans. Strengthening unionization efforts may help to ensure remaining coal jobs meet the needs of workers.

Finally, invest in local education to prepare the next generation of West Virginian workers. While proud of their coal mining experience, the coal miners and local community members with whom we spoke expressed a desire for a different and better future for their children. Currently, however, public school systems are underfunded due to declining tax revenues from coal, leading to deteriorating academic performance. The federal and state governments should provide resources to improve local public school systems and further develop higher education and vocational training programs to prepare West Virginia's future workforce for new industries with high-paying jobs. This needs to be done strategically and in concert with efforts to attract new industries to West Virginia.

6. Recommendations to Harvard

There are many opportunities for Harvard University, with its unparalleled educational and research resources, to make significant contributions to address the aforementioned challenges. We provide the following recommendations:

First, establish a research program focusing on just transitions in fossil-fuel-producing regions. The level of attention given to this topic at Harvard is insufficient and the ongoing research being done is scattered across the University. The complexity of the challenges and the urgency of addressing climate change require cross-disciplinary collaboration and more coordinated and strategic efforts. Establishing a research program in this area will help Harvard to create the level of support and environments for faculties needed to produce research and contribute to clean energy transitions in the United States and globally. The Salata Institute for Climate and Sustainability seems to be a natural host for such a research program in collaboration with the Belfer Center and Wiener Center.

Second, develop scholarships or fellowships for local policymakers and community leaders for leadership development and economic and policy knowledge enhancement. Harvard - perhaps the Center for Public Leadership at Harvard Kennedy School in particular - should design short fellowships for local and state government representatives and legislators focused on leadership development for long-term economic transition from fossil fuels to a sustainable clean energy economy. Local policymakers will have to grapple with many challenging questions during the transition period: the role that unions can play in the energy transition, the short- and long-term impacts of tax incentives on private investment, the costs and benefits of expanding Medicaid and universal healthcare in coal regions with high unemployment rates, etc. Even though they may not become experts on these subjects, exposure to these subjects will enhance their ability to lead the public through transition challenges.

Third, teach the topic of economic transitions in fossil fuel regions as part of courses on economic policy. Introducing economic transitions as an element of the core curriculum will spur further interest in the topic among the next generation of policymakers and academics. A yearlong study group dedicated to coal region transitions should be established to dig into the distinct challenges of different regions, strengthening comprehensive analysis through comparison. Harvard can consider implementing a peer-reviewed annual report dedicated to economic opportunity and the role of policymakers in coal regions. Harvard can also consider offering a focused minor on coal region transitions and issuing a certificate on Transitional Economy for Fossil Fuel Communities.

Fourth, expand community-directed technical assistance programs for transition communities. Harvard can partner with fossil fuel communities and provide technical assistance to those communities through internship programs, capstone projects, field studies, and/or studio options. For example, students could spend summer internships helping West Virginia legislators understand the available incentives in the IRA. This needs to be a sustained commitment (as opposed to one-off efforts) for Harvard to build trust with

community partners. Not only will this benefit coal communities, who may lack the resources and local expertise necessary to address transition challenges, but it would also enhance students' understanding of real-world issues and provide experience to help their career development.

Fifth, as part of the research program on coal region transitions, conduct strategic analyses of the challenges and opportunities facing specific regions. Partner with local community organizers and economic development organizations to develop comprehensive strategic plans based on these analyses. The Pathways to Prosperity project run by Harvard's Growth Lab in collaboration with the Wyoming Business Council is one such example.

Lastly, strengthen the Appalachia-to-college pipeline with youth development programs. For Harvard attendees, ensure need-based aid covers all costs incurred by a degree. Consider open access to fundamental courses through e-learning and extension school programming, like the MIT OpenCourseWare model.