



# JUST TRANSITIONS FOR THE COAL INDUSTRY:

## Building a Framework from International Best Practices



SCHOOL OF  
PUBLIC POLICY

CENTER FOR GLOBAL  
SUSTAINABILITY



# JUST TRANSITIONS FOR THE COAL INDUSTRY: Building a Framework from International Best Practices

---

**Acknowledgements** Funding for this project was provided by Bloomberg Philanthropies and ClimateWorks Foundation.

---

**Suggested citation** Colin Olson, Jiawei Song, Ryna Yiyun Cui , Leon Clarke and Caitlin Hamilton. "Just Transitions for the Coal Industry: Building a Framework from International Best Practices." (November 2021). Center for Global Sustainability, University of Maryland, College Park, MD. 16 pp.

---



# Table of Contents

SUMMARY ..... 02

INTRODUCTION..... 03

METHODOLOGY..... 04

FRAMEWORK..... 06

DISCUSSION..... 08

BIBLIOGRAPHY ..... 09

APPENDIX..... 11







# SUMMARY

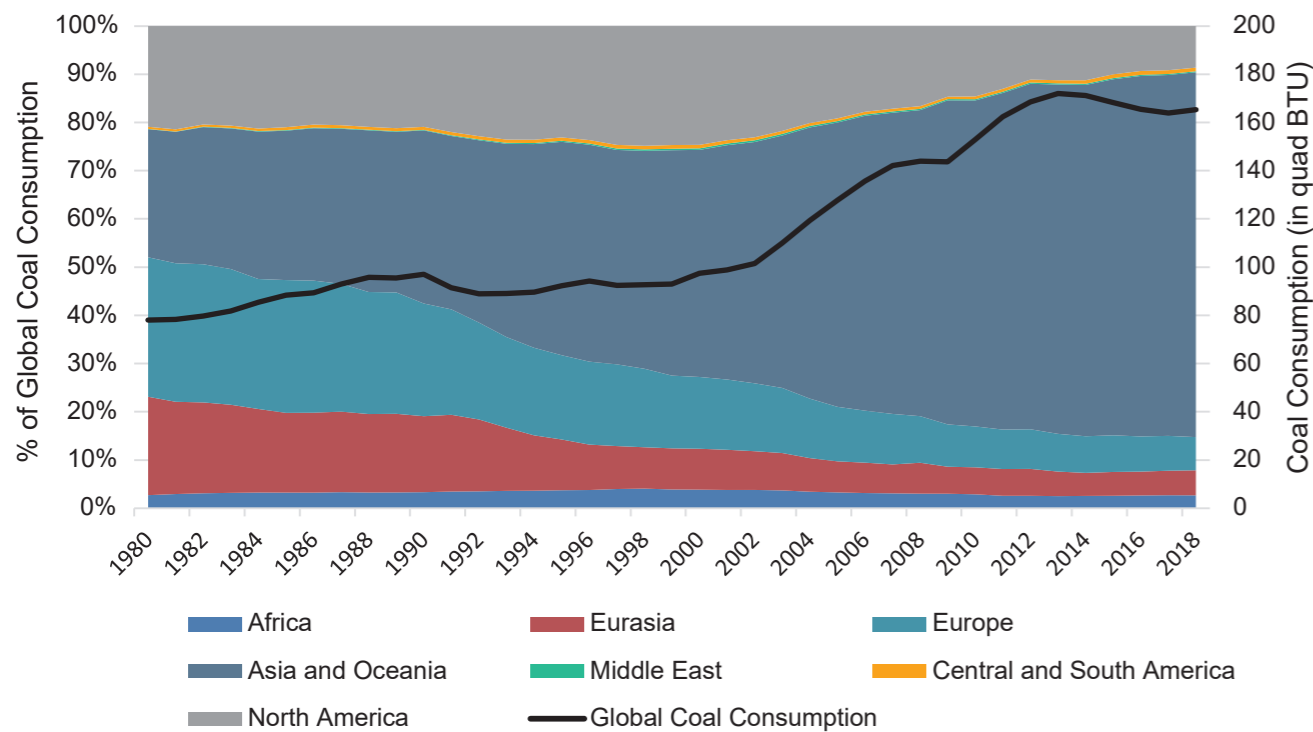
Growing demands to stop burning fossil fuels, and particularly coal, threaten the livelihoods of coal sector workers and coal-reliant communities. Well-executed transitions—*just transitions*—will be necessary to ensure economic and social stability in coal-dependent regions while transitioning to more sustainable energy systems. Based on lessons from a review of more than 300 existing policies, this working paper presents a Just Transition Framework that includes three policy transition areas and the policy strategies, tools, and stakeholders that support them.



# INTRODUCTION

Phasing out coal is at the heart of strategies to limit global warming. Despite significant discussion around the need to reduce emissions, global coal consumption has remained constant since 196 countries signed the Paris Agreement in 2015. The recent plateau represents a balance between decreasing coal consumption in developed countries and rapidly expanding reliance on inexpensive coal in developing countries, particularly in Asia (Figure 1). Europe and North America have reduced their coal consumption as a result of

increasingly competitive natural gas (maturation of fracking) and solar and wind power, public opposition (recognition of coal and other fossil fuels' roles in climate change), and policies aimed at phasing out coal generation (developed countries decreasing coal demand in favor of cleaner energy). Asia and Oceania's percentage consumption increased from 26 percent in 1980 to over 75 percent of the world's coal consumption in 2018.



**FIGURE 1 GLOBAL COAL CONSUMPTION BY REGION 1980-2018:** The axis on the left and stacked area show the regional coal consumption as a percentage of global consumption; the axis on the right and line show global coal consumption.

Phasing out coal jeopardizes the economic stability of major coal producing regions and hundreds of thousands of coal industry workers. For example, since U.S. coal production peaked in 2008, the number of U.S. coal miners has decreased by almost 40 percent

(34,055 coal miners laid off).<sup>1</sup> In the United Kingdom, there were 237,000 coal miners in 1980; that number has shrunk to just 699 in 2019.<sup>2</sup> Many of the affected workers are concentrated in coal-reliant communities. These communities face significant economic and

1 U.S. Energy Information Administration. Annual Coal Report.

2 U.K. Department for Business, Energy, and Industrial Strategy. "Historical Coal Data: Coal Production, Availability, and Consumption." 2020.

employment challenges. Targeted fossil fuel reductions raise the question: how can policymakers support a just transition for the millions of coal industry workers and their communities worldwide that will be disadvantaged by a coal phase out?

This question of a just transition is already challenging policymakers particularly in Europe and North America where coal consumption has already dropped dramatically from its highs. In developing countries, where coal consumption continues to expand, policymakers will inevitably face the challenges that Europe and North America face today. A comprehensive set of policies will be needed to provide social, economic, and environmental safeguards for affected workers and communities. While just transition policies do not transfer seamlessly between countries or even locales within countries, international best practices can

provide a resource for policymakers to understand their options.

Existing literature defines the just transition and its importance but does not identify best practices or compile existing policies for accessible information sharing. Some organizations, such as the United States' Just Transition Fund (created by the Rockefeller Foundation), offer technical assistance to coal communities to plan their just transition policies. But an assessment of international best practices for coal just transitions, designed to be adapted by policymakers and other stakeholders for their own unique needs, is not readily available in the existing literature. This working paper presents such a framework to understand best practices and options for managing just transitions for coal workers.

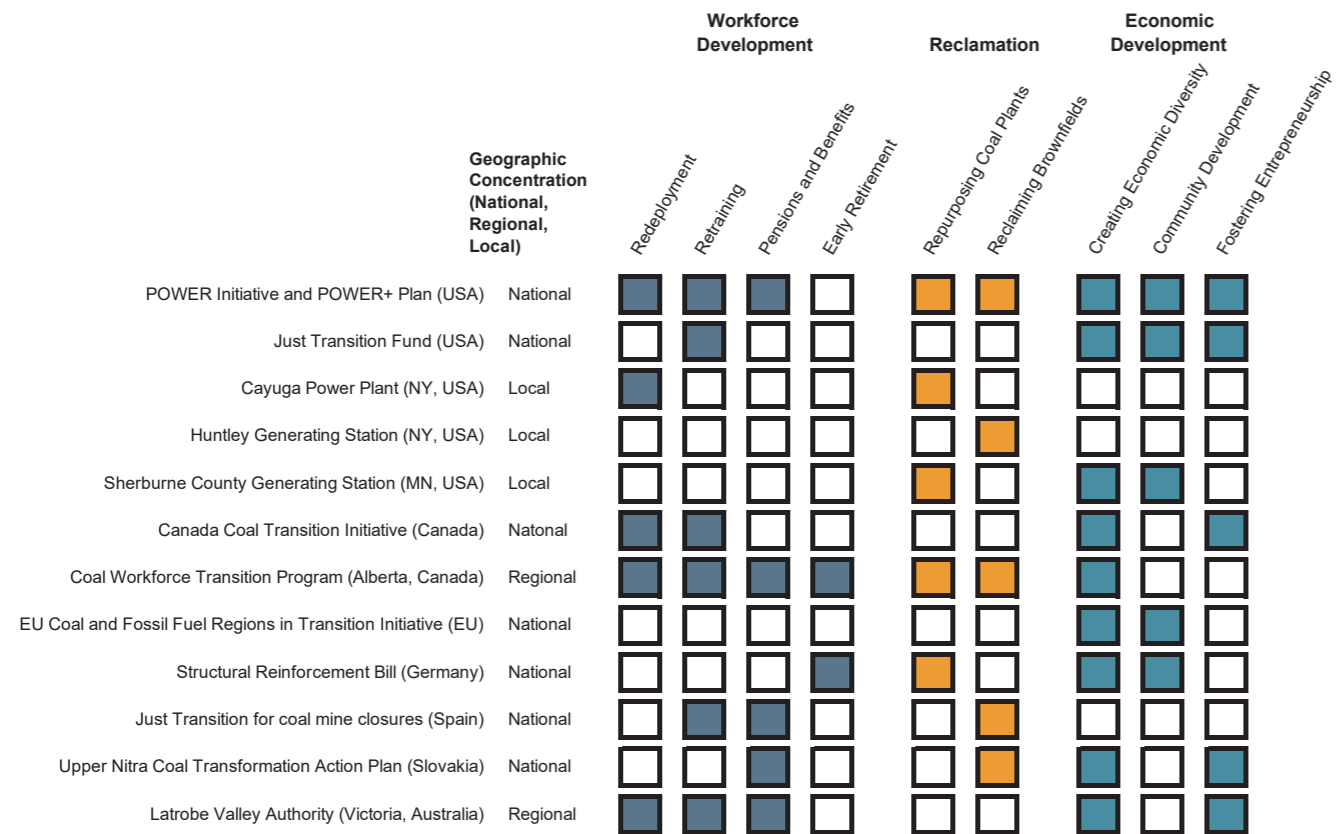
# METHODOLOGY

The framework in this working paper is based on a review of literature on coal transition data, just transition definitions, applications, and policies. We analyzed coal production, consumption, employment, and productivity data from the United States Energy Information Administration's Annual Coal Reports between 1980 and 2019. We also reviewed world, regional, and state

level coal consumption and production between 1980 and 2019 from the U.S. EIA, the International Energy Agency, and the U.K. Department of Business, Energy, & Industrial Strategy. This data provides context for the regions already entering just transition eras in their respective coal industries and evidence highlighting the hundreds of thousands of displaced coal workers.<sup>3</sup>



3 \*\*Coal employment data within other countries is not comprehensive enough for the analysis.



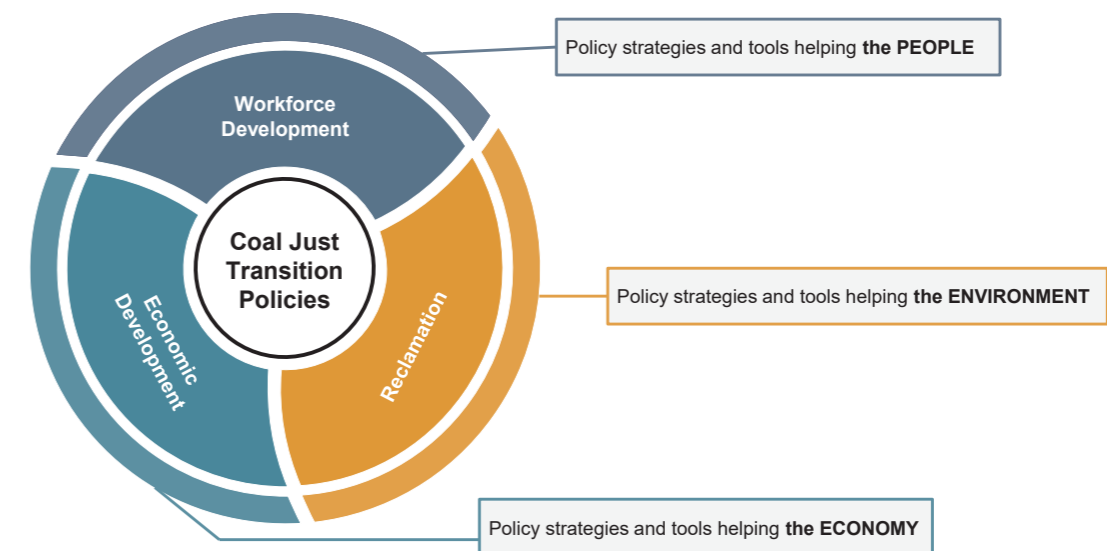
**FIGURE 2 OVERVIEW OF INTERNATIONAL JUST TRANSITION POLICIES:** This visualization represents the just transition initiatives studied to construct the Framework introduced in this report. Each initiative houses between 1 and 200 specialized just transition policies. The initiatives are color coded based on their fulfillment of the policy strategies grouped into each Area of the Framework.

To identify international best practices, we explored over 300 policies within several larger coal transitions at various levels of implementation across 7 countries (Figure 2). Each policy is an action taken by a policymaker or stakeholder that mitigates the impacts of a coal phase out on affected people, communities, or environments. We reviewed government press releases, budget reports, congressional proposals, and the annual reports of stakeholders engaged in coal transitions. Annual reports were also used to identify policy intentions and funding levels for each

program. Information on just transition policies is derived from policy proposals, funding breakdowns, specific partnerships with stakeholders, and updated reports on the impacts or status of each planned policy action.<sup>4</sup> Each policy reviewed was categorized with similar policies to create the tools and policy strategies that contribute to the success of a just transition under the Framework's 3 policy transition areas - (1) Workforce Development, (2) Reclamation, and (3) Economic Development (Figure 3).

<sup>4</sup> \*\*The countries evaluated that satisfied these information needs included the United States, Germany, Canada, the European Union, Slovakia, Spain, and Australia.

## FRAMEWORK



**FIGURE 3 COAL JUST TRANSITION POLICY TRANSITION AREAS**

The Framework breaks each transition area into 3 subcategories: Policy Strategies, the Policy Tools deployed to accomplish those strategies, and common Stakeholders with whom the policymakers engage under each strategy (Figure 3). The strategies, tools, and stakeholders are not an exhaustive list under the 3 subcategories that comprise a just transition in each Area but are a representation of the international best practices reviewed for this working paper. As more countries address coal employment issues

related to their fossil fuel phase outs, and as we learn more about what makes a just transition successful, these subcategories can grow to incorporate more strategies, tools, and stakeholders. The Framework (Figure 4) identifies focus areas to achieve a just transition and consolidates international best practices into an accessible format that policymakers and other stakeholders can adapt to their own unique needs and address challenges they may face.

JUST TRANSITION SUBCATEGORIES			
	POLICY STRATEGIES	POLICY TOOLS	STAKEHOLDERS
POLICY TRANSITION AREAS WORKFORCE DEVELOPMENT	<i>Redeploying workers to other mines</i>	Relocation assistance Consolidating younger coal workers to active mines	coal miners, unions, coal mine owners
	<i>Enhancing worker and family benefits</i>	Pension funding Miner healthcare guarantees Childcare center construction Substance abuse treatment centers Increased unemployment benefits	coal workers, unions, NGOs,
	<i>Retraining workers in new industries</i>	New industry training programs Tuition vouchers Offsite workforce transition facilitators Community college certificate partnerships	coal workers, universities, outside contractors, unions,
	<i>Early retirement</i>	Access to pension funds early Supplemental payments until pension eligibility	retirement-age coal workers, unions
RECLAMATION	<i>Repurposing coal-fired power plants</i>	Retrofitting energy buildings Converting existing coal power plant to data center	local government, state legislatures, coal workers, regional development commissions, power plant owners
	<i>Reclaiming coal mine brownfields</i>	Coal area rehabilitation Agriculture areas over reclaimed land Recreational tourism on reclaimed drainage rivers New energy installation on coal brownfields	local government, environmental groups, coal workers, regional development commissions,
ECONOMIC DEVELOPMENT	<i>Creating Economic Diversity</i>	Subsidies for new industry (green energy, tech) Information sharing on available resource tax incentives for new business Generate tourism in reclaimed areas	private sector, local government, regional development commissions
	<i>Community Development</i>	Grants for communities (schools, utilities, etc.) Food supply chain enhancement Tax credits for carbon capture Rural broadband infrastructure	school districts, local businesses, local government, private sector
	<i>Fostering Entrepreneurship</i>	Small business startup grants Business opportunity seminars Small/new business resources (procurement, state and federal programs)	small businesses, local entrepreneurs, local government,

FIGURE 4 JUST TRANSITION FRAMEWORK POLICY STRATEGIES, TOOLS, AND STAKEHOLDERS

In Workforce Development, policymakers use education and training, unemployment and supplemental pension funding, and relocation financing to redeploy or retire coal workers, enhance social benefits, or retrain workers in new industries. These policies often require deep knowledge of the local workforce’s demographics

(early retirement may be a viable option for an aging workforce) and the needs of the workers’ families (childcare centers for single parents). Engaging with worker unions, universities, and coal mine workers directly will greatly supplement this knowledge.

Reclamation projects either repurpose coal-fired power plants or reclaim coal brownfields. These lands have been rehabilitated into natural gas plants, data centers, new agriculture zones, clean energy sites, or to generate new tourism. Coal power plants have existing cooling and ventilation infrastructure often necessary for new technology companies or alternative fuel power plants. Reclamation policies are usually more effective if they are facilitated through state or local government because the reclaimed land can be critical to the local economy or temporarily employing local coal workers to reclaim the land can reduce lost wages.

Economic Development policies focus on strategies to stimulate new business through small business loans, resource and technical assistance access, or subsidies

## DISCUSSION

Several factors contribute to a policy’s effectiveness: early, multi-stakeholder engagement; complimentary policies at different levels of government; and specialized programs that cater to the unique needs of a coal community.

Without proper planning and coordination at multiple levels of engagement (local, state, and federal governments, private corporations, and nonprofits), the policy strategies and tools highlighted in this paper are susceptible to the inefficiencies and failures of any other government policy. Programs such as the United States’ POWER Initiative and Alberta, Canada’s Coal Workforce Transition Program (referenced as detailed case studies in Appendix A) are more effective despite political limitations because they have early, multi-dimensional stakeholder engagement and specialized programs tailored to individual communities’ needs.

Layers of government support provide insulation to shifting political sentiment that can cripple part of a country’s just transition strategy. A larger federal mandate for coal plant phase out or decreased coal mining production sets a precedent for individual states and forces compliance with these new standards. Additionally, local governments dedicated to a coal just transition can pledge government funds or finance structures to their own regional phase out. When one tier of government support falters, the others can maintain the previous success of just transition programs or continue to support new initiatives, mitigating the damage of a policy reversal.

for new and sustainable businesses. Economic Development also includes community development strategies such as broadband infrastructure development, particularly for rural, coal-reliant communities. Greater access to infrastructure provides workers more options post phase out and opportunity to decouple their lives from the coal industry.

Appendix A of this report discusses two case studies on just transition policies in Alberta, Canada and the United States. These case studies review the conditions leading up to the just transition policies implemented; how the policies were implemented; political limitations on the policies; and their estimated impact on the coal communities they address.

Specialized projects for communities affected by coal phase outs are equally important to the success of just transition policies. Local leadership works with higher level stakeholders in developing projects that address the unique needs of each affected community. A policy that is successful in Midwest is not guaranteed to produce the same level of progress in the Appalachian region of the U.S. National level policies increase effectiveness by engaging with specialized, local, or regional stakeholders to facilitate the policy strategy by implementing localized policy tools described in the Framework.

Based on the existing international just transition policies displayed in Figure 2, there is no clear pattern or set of policy tools that countries favor or that yield higher levels of success. Countries and communities adopt policy strategies based on the attitude of the existing political regimes and utilize specialized policy tools to achieve these strategies through localized stakeholders that can lobby for the exact needs of the affected coal community. The greatest indicator for just transition policy effectiveness is the presence of a national policy strategy focused on funding for workforce and economic development and a regional policy strategy that engages local and regional stakeholders, connecting them with funding and resources at the regional and national levels to deploy specialized projects in affected communities.



# BIBLIOGRAPHY

Alberta Government. "Support for Albertans Affected by the Coal Phase Out."

Appalachian Citizens' Law Center. "Take Action - Power+ Plan."

Appalachian Regional Commission. "Alabama 2020-2023 Appalachian Development Plan."

Appalachian Regional Commission. "Alabama 2021 Strategy Statement."

Appalachian Regional Commission. "Georgia 2020-2024 Appalachian Development Plan."

Appalachian Regional Commission. "Georgia 2021 Strategy Statement."

Appalachian Regional Commission. "Kentucky 2016-2020 Appalachian Development Plan."

Appalachian Regional Commission. "Kentucky 2021 Strategy Statement."

Appalachian Regional Commission. "Maryland 2020-2024 Appalachian Development Plan."

Appalachian Regional Commission. "Maryland 2021 Strategy Statement."

Appalachian Regional Commission. "Mississippi 2020-2024 Appalachian Development Plan."

Appalachian Regional Commission. "Mississippi 2021 Strategy Statement."

Appalachian Regional Commission. "New York 2011-2014 Appalachian Development Plan."

Appalachian Regional Commission. "New York 2020 Strategy Statement."

Appalachian Regional Commission. "North Carolina 2017-2020 Appalachian Development Plan."

Appalachian Regional Commission. "North Carolina 2021 Strategy Statement."

Appalachian Regional Commission. "Ohio 2020 Strategy Statement."

Appalachian Regional Commission. "Ohio 2020-2023 Appalachian Development Plan."

Appalachian Regional Commission. "Pennsylvania 2015-2018 Appalachian Development Plan."

Appalachian Regional Commission. "Pennsylvania 2021 Strategy Statement."

Appalachian Regional Commission. "South Carolina 2020-2023 Appalachian Development Plan."

Appalachian Regional Commission. "South Carolina 2021 Strategy Statement."

Appalachian Regional Commission. "Tennessee 2020 Appalachian Development Plan."

Appalachian Regional Commission. "Tennessee 2021 Strategy Statement."

Appalachian Regional Commission. "Virginia 2018-2021 Appalachian Development Plan."

Appalachian Regional Commission. "Virginia 2021 Strategy Statement."

Appalachian Regional Commission. "West Virginia 2018-2021 Appalachian Development Plan."

Appalachian Regional Commission. "West Virginia 2021 Strategy Statement."

Appalachian Regional Commission. "ARC's POWER Initiative."

Appalachian Regional Commission. "Power Award Summaries by State as of October 2020."

"Appalachian Regional Commission. Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative."

Bankwatch Network. "Green Recovery of the Slovak Just Transition Region." September 2020

Powering Past Coal Alliance. "Slovakia Coal Phase-Out." 26 May 2020.

"Chamberlin, Molly and Nicole Dunn. POWER Initiative Evaluation: Factors and Results of Project Implementation. September 2020. Page iv."

Congressional Research Service. The POWER Initiative: Energy Transition as Economic Development. 20 November 2019.

Department for Business, Energy, & Industrial Strategy. "Historical Coal Data: Coal Production, Availability, and Consumption 1853 to 2015." 2016

Downstream Strategies. The Benefits of Acid Mine Drainage Remediation on the North Branch Potomac River. 1 December 2010.

Edward P. Louie and Joshua M. Pearce. "Retraining Investment for U.S. Transition from Coal to Solar Photovoltaic Employment." Energy Economics. 57,295-302 (2016).

European Commission. "The European Green Deal Investment Plan and Just Transition Mechanism." 14 January 2020.

Goldenberg, Suzanne. "Google to convert Alabama Coal Plant into Renewable-Powered Data Centre." The Guardian. 25 June 2015.

International Energy Agency. "Coal 2019 Analysis and Forecasts to 2024." December 2019.

International Energy Agency. "Data and Statistics: Energy Supply, Total Energy Supply (TES) by Source, China." 2020

International Labour Union. "Resolution concerning sustainable development, decent work, and green jobs." 13 June 2013.

Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out." Parkland Institute.

Jackson, Emma and Ian Hussey. Alberta's Coal Phase-Out, A Just Transition? November 2019. Page 5.

Jeyakumar, Binu. Job Growth in Clean Energy. Pembina Institute. November 2016. Page 10.

Just Transition Fund. "Technical Assistance: Resources."

Magliozzi, Devon. "Plans in Motion to Convert Cayuga Power Plant to Data Center." The Ithaca Voice. 16 May 2019.

Marohn, Kirsti. "Wind Energy Tax Breaks Sought to Bring Google to Becker, Minn." MPRNews. 25 February 2019.

Nelsen, Arthur. "Spain to Close Most Coalmines in €250m Transition Deal." The Guardian. 25 October 2018.

Obama Administration. Investing in Coal Communities, Workers, and Technology: The POWER+ Plan. The President's Budget Fiscal Year 2016.

Popp, Rebekka. A Just Transition of European Coal Regions. E3G January 2019.

"Turning Brownfields into Greenfields: From Coal to Clean Energy." POWER. 1 November 2015.

United Nations Framework Convention on Climate Change. "Adoption of the Paris Agreement. Proposal by the President." 12 December 2015.

"U.S. Congress, House Appropriations. Energy and Water Appropriations Bill. 2019. Report to accompany HR5895, 115th Congress, 2nd Session, 2019. Page 159."

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. "Solar Energy Careers."

U.S. Energy Information Administration. "Coal Data Browser: Aggregate Coal Mine Average Employees, Appalachia."

U.S. Energy Information Administration. "Coal Explained, Coal Imports and Exports." 21 July 2020.

U.S. Energy Information Administration. Annual Energy Outlook 2019: With Projections to 2050. 24 January 2019.

U.S. Senator Mitch McConnell. "Benefits Secured for Retired Coal Miners and Their Families." 8 May 2017.

Vaughan, Adam. "U.K. Government Spells Out Plan to Shut Down Coal Plants." The Guardian. 5 January 2018.

White House Archives. Executive Order on Tackling the Climate Crisis at Home and Abroad. 27 January 2021.



# APPENDIX

These case studies over the United States' POWER and POWER+ Initiatives apply the Framework and investigate the limitations of just transition policies in two historically coal producing countries.

## POWER AND POWER+ INITIATIVES (UNITED STATES)

Before COVID19, The U.S. Energy Information Administration projected U.S. coal production would decline through 2050, declining sharply in the mid-2020s.<sup>5</sup> To address severe economic distress on coal-reliant regions, the Obama Administration enacted its Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Plus Plan.

The POWER+ Plan broadly addressed economic diversification for affected coal communities; social welfare for coal mineworkers and reclaiming abandoned coal mine lands; and tax incentives to support development and deployment of carbon capture technologies. Proposed in the FY2016 President's Budget, the POWER+ Plan featured cooperation between the Department of Labor, Appalachian Regional Commission (ARC), the Department of Commerce, Economic Development Administration, Small Business Administration, and several other federal agencies. Table A.1 shows the proposed funding amounts dedicated to several of the federal agencies initially involved in the POWER+ Plan.

TABLE A.1 POWER+ PLAN FY2016 PROPOSED FUNDING

AGENCY	PROPOSED FUNDING
Department of Labor	\$20 million
Appalachian Regional Commission	\$25 million
Economic Development Administration	\$6 million
Environmental Protection Agency	\$5 million
Total	\$56 million

The POWER+ Plan also allocated \$12 million in grants and \$85 million in loans from the USDA rural development funds; \$1 billion for abandoned mine land reclamation; and \$2 billion for carbon capture and sequestration technology.<sup>6</sup> Additionally, the Obama Administration used existing funds in FY2015 on the POWER Initiative to galvanize some of the economic

aspects of the POWER+ Plan before bringing the budget proposal to Congress. The targeted funding from existing sources was intended to address regional and national economic concerns for coal workers affected by the coal phase out. Table A.2, below, shows the existing funds dedicated to the POWER Initiative, a "down payment" for the POWER+ Plan.

<sup>5</sup> U.S. Energy Information Administration. *Annual Energy Outlook 2019: With Projections to 2050*. 24 January 2019.

<sup>6</sup> Congressional Research Service. *The POWER Initiative: Energy Transition as Economic Development*. 20 November 2019.

TABLE A.2 POWER INITIATIVE FY2015 TARGETED FUNDS

AGENCY	PROGRAM/ACTIVITY	TARGETED FUNDS
Department of Commerce, Economic Development Administration	Assistance to Coal Communities, Economic Adjustment Assistance, and Partnership Planning	\$15 million
Department of Labor, Employment and Training Administration	Dislocated Worker National Emergency Grants	\$10-20 million
Small Business Administration	Regional Innovation Clusters and Growth Accelerators	\$3 million
Appalachian Regional Commission	Technical Assistance and Demonstration Projects	\$0.5 million

President Obama's vision of a just transition for coal sector workers and their communities was never fully realized: The POWER+ Plan as a whole failed to pass Congress. Separate pillars of the Plan such as the RECLAIM Act became law but the ambitious just transition approach of the Obama Administration was never fully implemented. President Trump's succession to the U.S. Presidency and his commitment to revitalizing the coal sector created a sudden and severe

policy shift away from a just transition. As of November 2019, the POWER Initiative exists solely under the Appalachian Regional Commission (ARC) and is no longer a multi-agency initiative. Initial appropriations from the POWER Initiative still exist through the EDA's Assistance to Coal Communities Program and Abandoned Mine Land Reclamation Investments but are not considered part of the POWER Initiative under the Trump Administration.

JUST TRANSITION SUBCATEGORIES			
POLICY STRATEGIES		POLICY TOOLS	STAKEHOLDERS
WORKFORCE DEVELOPMENT	<i>Redeploying workers to other mines</i>	Workforce training and job placement hubs in Pennsylvania	Pennsylvania state government, coal mine owners
	<i>Enhancing worker and family benefits</i>	WestCare Kentucky 24,000 sq ft substance abuse treatment and childcare center	WestCare, Pikeville, Kentucky local government, coal community families
	<i>Retraining workers in new industries</i>	One-year IT certificate program partnered with community colleges in multiple states	Community colleges, coal workers, local and state governments
RECLAMATION	<i>Repurposing coal-fired power plants</i>	Converting coal plants into natural gas burning	Coal plant owners, local governments, coal workers, Office of Surface Mining Reclamation and Enforcement
	<i>Reclaiming coal mine brownfields</i>	North Branch Potomac River (Maryland) clean up	Environmental groups, coal miners, coal mine owners
ECONOMIC DEVELOPMENT	<i>Creating Economic Diversity</i>	Recreational tourism from North Branch Potomac River clean up, \$3 million to local economy and 40 new job	Maryland Department of Environment, Garrett and Allegany County governments, Downstream Strategies, coal mine workers
	<i>Community Development</i>	Economic Development Administration Assistance to Coal Communities Program	EDA, coal communities, local governments
	<i>Fostering Entrepreneurship</i>	Partnership funds with universities creating entrepreneurship programs	Universities in Appalachia, coal communities,

FIGURE A.1 APPLYING THE FRAMEWORK: UNITED STATES POWER AND POWER+ INITIATIVES

The Appalachian Regional Commission (ARC) is a federal-state partnership established in 1965 to address economic instability in the Appalachian region. Its jurisdiction spans 420 counties across 13 states with economic development activities federally funded by congressional appropriations.<sup>7, 8</sup> ARC uses federal resources to encourage economic development through implementation grants, technical assistance grants, broadband deployment projects, and multi-level stakeholder designed projects. Since the crippling of the Power+ Plan, ARC designates \$50 million annually of its budget to “activities in support of the POWER+ Plan.”<sup>9</sup> Between FY2016 and FY2020, ARC has invested \$238 million over 293 projects in 353 counties (Figure A.1

shows how ARC’s projects satisfy the just transition framework created in this paper) while leveraging an estimated \$1.1 billion in private investment.<sup>10</sup> ARC projects these investments will create or retain 26,000 jobs and continue to increase job retention annually.<sup>11</sup>

For over 50 years, the ARC has operated as a federal-state partnership, giving the Commission the legitimacy and early stakeholder engagement necessary to administer effective just transition programs. An independent evaluation in 2020 of 111 ARC-sponsored programs showed high concentrations of success and the benefits of multiple projects occurring simultaneously or subsequently.<sup>12</sup> The 111 programs evaluated yielded

7 Congressional Research Service. *The POWER Initiative: Energy Transition as Economic Development*. Pages 6-7.  
 8 The states include Alabama, Georgia, Kentucky, Ohio, New York, Maryland, Mississippi, North Carolina, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia.  
 9 U.S. Congress, House Appropriations. *Energy and Water Appropriations Bill, 2019*. Report to accompany HR5895, 115<sup>th</sup> Congress, 2<sup>nd</sup> Session, 2019. Page 159.  
 10 Appalachian Regional Commission. *Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative*.  
 11 Appalachian Regional Commission. “ARC’s POWER Initiative.”  
 12 Chamberlin, Molly and Nicole Dunn. *POWER Initiative Evaluation: Factors and Results of Project Implementation*. September 2020. Page iv.

500 organizations involved in implementation and more than 700 unique relationships.<sup>13</sup> These long-term and multi-level relationships are pivotal to the continued success of the POWER Initiative under the ARC.

In the Appalachian region of the United States, 29,600 workers were employed in coal mines in 2017 (30,600 in 2018 and 30,300 in 2019).<sup>14</sup> While the United States does not have a specific coal phase out timeline, President Joe Biden has ambitious energy transition plans and has pledged to phase out fossil fuels over time.<sup>15</sup> Additionally, the market factors such as low natural gas costs and renewable energy maturity are naturally pushing coal from the U.S. energy mix. The combination of these policies and market conditions makes it reasonable to assume all of these coal jobs will disappear. The Appalachian Regional Commission’s POWER Initiative investments between 2017 and 2020 are projected to create or retain more than 26,000 jobs total across Appalachia.<sup>16</sup> The ARC projects an additional tens of thousands of local workers and students for jobs in new industry brought to the region by the POWER investments. The POWER Initiative has the demonstrated upfront financial commitment, early stakeholder engagement, and specialized local just transition policies to create thousands of more full-time jobs than the region will lose due to the coal phase out.

ALBERTA, CANADA COAL WORKFORCE TRANSITION PROGRAM

Coal has dominated the electricity market in Alberta, Canada since the 1980s, providing 80 percent of Alberta’s electricity in the late 1980s and steadily declining through today.<sup>17</sup> Coal power still comprised over 50 percent of Alberta’s installed generating capacity in 2015 when it elected the Alberta New Democratic Party (NDP) to the province’s government.<sup>18</sup> In 2017, Alberta’s entire electricity industry (coal and other

energy included) employed 2 percent of the province’s workforce and produced 1 percent of Alberta’s GDP.<sup>19</sup> Conversely, the electricity industry generated 17 percent of Alberta’s annual greenhouse gas emissions.<sup>20</sup> This disproportionate GHG footprint called for an accelerated coal transition from the NDP. Additionally, 2012 federal regulations required 12 of Alberta’s 18 coal-fired power plants to shut down by 2029. The NDP faced a significant challenge to reduce Alberta’s reliance on coal power while protecting an estimated 2,890 coal industry workers’ livelihoods through just transition policies.<sup>21</sup>

In response to its coal just transition mandate, the NDP implemented Alberta’s Coal Workforce Transition Program. This regional coal transition policy apparatus accelerated Alberta’s coal phase out, forecasted to end the province’s coal reliance by 2023. This timeline outpaces Canada’s federally mandated coal phase out deadline of December 31, 2029. When the NDP government left office in March 2019, coal-fired plants only generated 35.5 percent of Alberta’s total electricity generation.<sup>22</sup> The NDP reduced coal as a share of Alberta’s total electricity generation by 14.5 percent in 4 years. The Coal Workforce Transition Program exemplifies a regional just transition policy program that provides comprehensive Workforce and Economic Development practices to reduce the burden of the transition on coal industry workers.

The applied framework (Figure A.2) shows the Coal Workforce Transition Program’s fulfillment of policy tools, strategies, and stakeholders that comprise the just transition policy areas of the Framework. The Program is a regional initiative that also provides local funding opportunities for 17 communities adversely affected by the coal phase out. \$5 million in initial funding was allocated by the NDP in September 2017 under the Coal Community Transition Fund. The Fund funded 12 initial projects before exhausting its \$5 million allocation

13 Chamberlin, Molly and Nicole Dunn. Page iv.  
 14 U.S. Energy Information Administration. “Coal Data Browser: Aggregate Coal Mine Average Employees, Appalachia.”  
 15 White House Archives. *Executive Order on Tackling the Climate Crisis at Home and Abroad*. 27 January 2021.  
 16 Appalachian Regional Commission. “POWER Award Summaries by State as of October 2020.” Page 1.  
 17 Jackson, Emma and Ian Hussey. “Alberta’s Coal Phase-Out.” *Parkland Institute*.  
 18 *Ibid*.  
 19 *Ibid*.  
 20 *Ibid*.  
 21 Jackson, Emma and Ian Hussey. *Alberta’s Coal Phase-Out, A Just Transition? November 2019*. Page 5.  
 22 Jackson, Emma and Ian Hussey. “Alberta’s Coal Phase-Out.” *Parkland Institute*.



in March 2018.<sup>23</sup> The formal Coal Workforce Transition Program policies began in January 2018 and were

funded by the Government of Alberta's \$40 million Coal Workforce Transition Fund.

JUST TRANSITION SUBCATEGORIES				
		POLICY STRATEGIES	POLICY TOOLS	STAKEHOLDERS
WORKFORCE DEVELOPMENT		<i>Redeploying workers to other mines</i>	\$5,000 relocation assistance for workers moving at least 40km away	Alberta Community and Social Services (ACSS), coal miners, coal mine owners
		<i>Enhancing worker and family benefits</i>	Flexible relief grants, 75% of lost wages over 45 weeks	ACSS, coal communities, coal workers and families
		<i>Retraining workers in new industries</i>	Tuition vouchers, \$12,000 for coal workers pursuing post-secondary education	ACSS, local universities, coal workers
		<i>Early retirement</i>	Grants up to 75% of prior earnings for 72 weeks	ACSS, older coal workers
RECLAMATION		<i>Repurposing coal-fired power plants</i>	Battle River power plant conversion to natural gas	Flagstaff County government, Alberta Power, Alberta Utilities Commission
		<i>Reclaiming coal mine brownfields</i>	Mine Financial Security Program, manages costs of reclaiming coal mines and processing plants to insulate community from paying	Alberta government, Alberta Energy Regulator, local government, coal communities
ECONOMIC DEVELOPMENT		<i>Creating Economic Diversity</i>	Action for Healthy Communities Society of Edmonton, cultural tourism development	AHC, Edmonton government, Alberta government, coal community
		<i>Community Development</i>	Decentralised Energy Canada, capacity building for community energy projects in indigenous areas	DEC, Calgary government, Alberta government, coal community
		<i>Fostering Entrepreneurship</i>	Alberta Centre for Advanced MNT Products, tech sector start-up incubator	ACAMP, Edmonton government, Alberta government, local entrepreneurs

FIGURE A.2 APPLYING THE FRAMEWORK: ALBERTA, CANADA COAL WORKFORCE TRANSITION PROGRAM

Complimentary policies from local, state, and national governments provide the legitimacy, funding, policy specialization, and multi-level stakeholder engagement that usually accompany a just transition. In Canada, the national government's coal phase out deadline on December 31, 2029 provided the initial legitimacy for Alberta's provincial government to initiate its Coal Workforce Transition Program in 2015. By 2019 when

Alberta's ruling party left office, it had reduced the province's coal reliance from over 50 percent to 35.5 percent of its installed generating capacity.<sup>24</sup> During its tenure, Alberta's New Democratic Party accelerated the province's projected coal phase out to 2023; protected an estimated 2,890 coal workers' livelihoods; and combined \$40 million in local funding with over \$6 million from the Canadian national government.<sup>25</sup> Another key

benefit of the multi-level government engagement is insulation from shifting political power: The current party in power in Alberta cancelled all future funding for coal just transition policies, but federal funding and phase out mandates protect the progress made and ensure the continued coal phase out.

The Coal Workforce Transition Program's effectiveness was supplemented by a federal commitment through the Canada Coal Transition Initiative. In 2019, \$6.8 of the available \$35 million funds were committed to Alberta coal communities. Additionally, early decision making by the provincial and federal government since 2007 facilitated the success of Alberta's coal transition policies. In 2020, the newly elected Albertan Unified Conservative Party government cancelled the future funding for the province's coal transition policies. While this rollback of funding halts the progress in Alberta, the prior success and commitment to coal phase out in many Albertan coal mines and power plants is unlikely to be rolled back.

Alberta's progress toward a coal phase out dates back to 2007 when the provincial government introduced a \$15 per tonne price on carbon emissions for industrial emitters, lowering the market competitiveness of coal in Alberta.<sup>26</sup> Federal regulations introduced in Canada in 2012 mandated 12 of Alberta's 18 coal-fired electricity plants retire by 2029.<sup>27</sup> This emphasis on a coal phase out between federal and provincial governments enabled Alberta to offer local coal companies a \$1.36 billion agreement over 14 years (2017-2030) to offset coal production. These funds came from the province's carbon tax established in 2007. The specifics of these agreements are not public knowledge, but the three affected corporations have collectively agreed to convert or drastically reduce operational capacity of all 18 coal units in Alberta by 2023, 6 years ahead of the federally mandated deadline.<sup>28</sup>

In 2017, there were 3,100 coal jobs in Alberta, 2,480 of these are coal mining and processing.<sup>29</sup> If Alberta meets the federal mandate to phase out coal by 2029, then all of these jobs should be lost. Additionally, the Parkland Institute estimates an additional 410 power plant jobs will be lost by 2029 as many of the coal-fired power plants are converted into natural gas plants.<sup>30</sup> Natural gas power plants are not as labor intensive and therefore would require fewer full-time jobs to maintain operations. This totals around 2,890 coal industry jobs that will be lost in Alberta due to the coal phase out by 2029 (many of these likely to disappear before 2023 when 14 of the 18 Albertan coal plants will be shut down or converted).

The Parkland Institute also estimates 15,000 full-time jobs necessary to convert the coal-fired plants by 2029. This translates to 1,070 full-time jobs created annually over 14 years. A Pembina Institute report in 2016 projects Alberta's Renewable Electricity Program to create between 900 and 2,500 full-time jobs annually through renewable energy deployment and energy efficiency enhancement.<sup>31</sup> If Alberta continues its just transition programs, these projections yield 1,970 to 3,570 jobs created annually in coal communities. Based on estimates by the Parkland and Pembina Institutes, the job creation from just transition policies in Alberta will significantly outpace total jobs lost due to the coal phase out by 2029. In 2019, the United Conservative Party provincial government canceled \$200 million in funding for Alberta's Community Generation Program which supported small-scale and local generation projects.<sup>32</sup> While the just transition policies already in place are reinforced by federal commitments and prior phase out success, this political shift threatens the success of the Coal Workforce Transition Program in Alberta and could threaten thousands of jobs created in current coal communities.

23 *Ibid.*  
 24 Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out." *Parkland Institute*. 20 November 2019.  
 25 *Ibid.*

26 Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out, A Just Transition?" Page 59.  
 27 Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out." *Parkland Institute*.  
 28 *Ibid.*  
 29 Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out." *Parkland Institute*.  
 30 *Ibid.*  
 31 Jeyakumar, Binu. *Job Growth in Clean Energy*. Pembina Institute. November 2016. Page 10.  
 32 Jackson, Emma and Ian Hussey. "Alberta's Coal Phase-Out." *Parkland Institute*.

排版印制 / 136 7111 7637

**miro**design

米罗空间品牌设计