How Care can Foster Action: Embedding Equity in Climate Transition Policy

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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Introduction

As nations pursue ambitious climate action, defined broadly as the initiatives aimed at mitigating greenhouse gas emissions and promoting environmental sustainability, one critical issue remains dangerously under-addressed: the human cost of decarbonization. While the push toward net-zero emissions is essential for climate survival, it is also disrupting the livelihoods of millions—particularly in regions historically dependent on fossil fuels. This is not just a technical shift in energy systems; it is a profound sociotechnical crisis, where environmental progress collides with economic vulnerability and social inequity. Research shows that marginalized communities—including low-income workers, rural populations, and communities of color—are disproportionately impacted by fossil fuel job displacement due to limited access to retraining opportunities and a persistent mismatch between existing skillsets and the demands of emerging green industries (Hanna et al., 2024). The problem is not merely technical; it is fundamentally ethical and social. Guided by the ethics of care theoretical framework, this paper argues that achieving a sustainable energy transition requires more than emissions reductions—it demands policies that prioritize the well-being, dignity, and inclusion of those most at risk of being left behind (Taylor, 2020). Conceptually, this research draws from case studies, policy analysis, and historical precedent to evaluate what a truly equitable job transition should look like. Specifically, it asks: How can policymakers design equitable job transition policies that protect vulnerable workers during the shift to a low-carbon economy? To answer this, the paper makes three core arguments: (1) understanding the social inequities tied to fossil fuel job loss is critical for informed transition planning; (2) ethical considerations, especially relational responsibility and empathy, must shape policy frameworks; and (3) successful transitions require regionally tailored investments, retraining support, and the decentralization of authority to local

governance structures. Together, these arguments build toward a vision of climate policy that is not only environmentally responsible but also socially just.

The Social Inequities of Job Displacement

Job losses in fossil fuel industries disproportionately affect marginalized communities, potentially exacerbating existing economic inequalities. For the purposes of this discussion, marginalized communities refer to populations that face systemic barriers to economic and social opportunities due to factors such as geographic isolation, socioeconomic status, race, or lack of access to education and resources. These communities are often concentrated in regions heavily dependent on fossil fuel industries, where the local economy and livelihoods are tied to coal, oil, or gas production.

By 2030 and 2050, more jobs are projected to be created in low-carbon, renewable energy sectors than the number of jobs displaced from decommissioning fossil fuel power plants (Hanna et al., 2024). This net job creation—the overall increase in employment opportunities after accounting for job losses and gains—offers hope for economic growth and a more sustainable future. This reliable study offers a well-documented analysis of the economic potential of renewable energy industries by employing robust employment models on a wide range of international statistics. However, the authors also note a lack of data on the geographic distribution of employment opportunities in decarbonizing energy systems. An ethics of care framework compels us to examine not only the aggregate outcomes of job creation but also the lived experiences of those who may be left behind (Taylor, 2020). While net job creation is promising, this approach emphasizes the importance of addressing the unequal distribution of employment opportunities and prioritizing the needs of vulnerable populations.

Regions blessed with abundant natural resources, particularly fossil fuels, often find themselves paradoxically vulnerable to their dependence on those industries. This phenomenon, sometimes referred to as the "resource curse," arises when a region's economy becomes overly reliant on the extraction and processing of natural resources, leaving it vulnerable to shifts in market demand or policy (Frankel, 2012). This is especially the case in Appalachia, a region particularly vulnerable to the 71% decline in coal mining jobs between 1985 and 2017 (Federal Reserve Bank of St. Louis, 2017). Between the 2001 and 2021, employment in Appalachian grew by 1.5 percent compared to 12.0 percent for the rest of the U.S., with 60% of Appalachian counties experiencing a decline in employment (Bureau of Labor Statistics, 2022).

The challenges faced by workers in regions dependent on fossil fuels manifest in multiple ways, particularly when considering their ability to transition to jobs in the green energy sector. First, there is the question of whether the skills possessed by fossil fuel workers are similar enough to those required in green industries. According to the research center and think tank, the Smart Prosperity Institute, "the top skills in the sectors that shed jobs are similar to those in sectors that gain jobs" (Atiq et al., 2022). Produced in collaboration with the Future Skills Centre, a reputable, government-funded initiative dedicated to workforce development, the institute’s work is widely referenced by policymakers, industry leaders, and academics, enhancing the credibility of its findings in shaping Canada's transition to a low-carbon economy. Their report provides hope that fossil fuel workers could leverage their existing skills in renewable energy sectors, reducing the need for extensive retraining programs in some cases.

However, the feasibility of this transition depends on a second critical factor: geography. Fossil fuel jobs are often concentrated in specific regions, such as Appalachia or the Gulf Coast, while green energy jobs may emerge in entirely different areas. A published report on the policy

portal of the Centre for Economic Policy Research (CEPR) discusses how "the fossil-to-green pipeline is feasible, but only if these green jobs materialize near areas where fossil fuel workers live" (Aklin, 2023). If these jobs do not materialize near existing fossil fuel communities, even a close skills match will not suffice to prevent economic displacement. The Aklin study is particularly compelling because it acknowledges the dual challenge of skill alignment and geographic proximity, a nuance that is often overlooked in broader discussions about the energy transition. I agree with this analysis because it highlights the practical barriers workers face, even when their skills are transferable, reinforcing the importance of addressing both location and opportunity. This perspective aligns with an ethics of care framework, which emphasizes the need to consider not just abstract economic outcomes but the lived experiences and practical realities of affected individuals.

The implication of these observations is clear: while the skills of fossil fuel workers may align with the demands of green energy industries, the transition will only succeed if deliberate efforts are made to ensure geographic alignment between job losses and job creation. This includes investing in regional economic development, supporting green energy projects in fossil fuel-dependent areas, and providing relocation assistance when necessary. Without these measures, the energy transition risks leaving behind the very workers it seeks to empower, perpetuating cycles of inequality and regional marginalization.

Moreover, the cultural identity of these regions is often deeply tied to fossil fuel industries, making the transition not only an economic challenge but also an emotional and cultural one. A series of interviews with residents of Appalachia reveal the depth of cultural ties to the coal industry; coal mining provided not only financial stability, but also a strong sense of identity and purpose, reinforcing bonds within families and communities (Carley et al., 2018).

The decline of the industry has left many residents grappling with a dual loss: the erosion of their livelihoods and the dismantling of a cultural legacy tied to their sense of place. The Carley et al. study is particularly powerful because it examines the extent of marginalization beyond employment, emphasizing the personal and communal experiences of those affected. While a purely utilitarian view of the energy transition—one that focuses solely on net job creation—overlooks the distress and instability experienced by those whose communities are being reshaped, the ethics of care perspective calls for policies that do more than just offer economic alternatives; they must also validate the identities of affected workers, engage them in decision-making processes, and provide emotional and social support to help them navigate these profound changes (Johnson, 2020).

A utilitarian framework, which seeks to maximize overall happiness, might favor a laissez-faire approach to the energy transition, arguing that market forces will naturally allocate resources and labor efficiently. Proponents might claim that the growth of renewable energy industries will eventually create abundant opportunities, absorbing displaced fossil fuel workers without costly interventions. However, this perspective overlooks the disproportionate burden placed on vulnerable communities during the transition. Market forces alone are unlikely to address the geographic and systemic inequalities faced by regions reliant on fossil fuels, such as Appalachia, where green jobs may not emerge naturally. Additionally, displaced workers often lack the financial resources or mobility to relocate or retrain, exacerbating economic and social disparities. This neglect of marginalized groups fails to uphold the ethical imperative to ensure an equitable transition; those who3 are most vulnerable to economic disruption require the most support from an ethics of care perspective, as they have the least power to shape policy and the fewest resources to adapt.

Ethical Considerations in Transition Policies

As governments and industries develop transition policies to achieve net-zero emissions, ethical considerations must play a central role in ensuring a fair and inclusive shift. Too often, these strategies prioritize technical feasibility and economic efficiency over social equity, leaving vulnerable populations at risk. Ethical frameworks, such as the ethics of care, emphasize the importance of centering transition policies on the well-being of those most affected by economic displacement and environmental consequences. Neglecting these ethical dimensions undermines public trust, exacerbates socioeconomic inequality, and ultimately weakens the sustainability of climate action. A comparative analysis of transition policies across different regions highlights the need for a more holistic, justice-oriented approach to ensure that sustainability efforts do not come at the expense of social welfare.

A key example of this oversight can be observed in carbon-neutral strategies that prioritize emission reductions while neglecting social equity concerns. Chen et al. (2022) examine a variety of decarbonization policies and find that while these strategies successfully curb emissions, they often fail to integrate measures that address the socioeconomic consequences of industry shifts. Policies such as carbon pricing and cap-and-trade systems, for instance, place financial burdens on high-emission industries, accelerating job losses in fossil fuel-dependent regions without corresponding investments in worker retraining or economic diversification. This critique is well-founded—for many workers, especially in communities where entire local economies are built around coal mining or oil extraction, the immediate concern is not climate metrics but job security and economic survival. When policies focus exclusively on environmental targets and overlook labor market impacts, they risk alienating the very populations they need to engage. As Chen et al. highlight, this dynamic is already evident in

coal-dependent regions in the United States and Eastern Europe, where job loss fears have led to resistance against decarbonization.

The United States' historical approach to large-scale job losses, particularly following the rise of Chinese import competition, demonstrates the consequences of failing to implement effective workforce transitions. As Hanson (2022) notes, when U.S. manufacturing jobs were rapidly outsourced to China beginning around 1990, policymakers primarily relied on passive assistance—such as unemployment insurance and disability benefits—rather than active reemployment programs. The result was that many displaced workers did not successfully transition into new careers, and affected regions saw long-term economic stagnation; in past industry declines, such as the coal sector, job losses persisted for decades. Younger workers left in search of opportunities, and those who remained—often with lower education levels—became increasingly reliant on government aid, particularly subsidized healthcare. This historical comparison is particularly powerful, as it offers concrete evidence of what happens when economic transitions are not met with proactive, worker-centered policies. Just as the shift away from domestic manufacturing reshaped the labor market and hollowed out entire regions, the transition away from fossil fuels risks producing similar long-term damage if not guided by intentional policy design. By drawing this parallel, Hanson makes a compelling case for learning from past failures—showing that effective interventions must go beyond passive support and instead invest in local economies, retraining, and long-term workforce mobility. This historical lens adds depth and urgency to the conversation around energy transition and social equity.

In contrast, some countries have implemented more balanced transition policies that incorporate social equity alongside environmental objectives. Comparative studies indicate that just transition initiatives in Europe tend to focus more on policy structure than worker outcomes,

yet they still offer useful insights for improving transition strategies worldwide (Bohnenberger, 2022). For example, Germany's coal phase-out plan integrates financial support for workers, infrastructure investments in coal-reliant regions, and structured retraining programs to help displaced workers transition into renewable energy sectors. While these measures do not eliminate the hardships of economic displacement, they demonstrate a greater commitment to social responsibility than many transition policies found elsewhere. The European Green Deal similarly incorporates social protections, recognizing that an equitable transition is crucial for maintaining political stability and public support for climate policies. However, even these efforts fall short in certain aspects, as they often prioritize economic competitiveness over the lived experiences of affected workers.

The Tennessee Valley Authority (TVA) remains one of the most prominent examples of a region-targeted policy that produced long-term economic transformation, offering both bright spots and lessons for future efforts. Launched in the 1930s, the TVA brought large-scale infrastructure investment—dams, roads, electricity, and flood control—to one of the most economically distressed regions in the U.S. during the Great Depression. It successfully transitioned the Tennessee Valley from a predominantly agricultural economy to a more industrialized one, with sustained gains in manufacturing employment and regional income long after federal subsidies ceased (Kline & Moretti, 2013). These durable effects were largely attributed to agglomeration economies, in which clustering of industries and workers reinforced productivity and job creation. Kline and Moretti's analysis is particularly effective in showing how historical place-based investment can yield long-lasting regional benefits, while also cautioning policymakers about the potential for uneven national outcomes. By pointing out that the TVA's gains in manufacturing came at the cost of economic activity elsewhere, and that

agricultural improvements faded once subsidies stopped, the study provides a balanced view that is both historically grounded and forward-looking. It underscores that modern transition policies must go beyond one-time capital infusions to include long-term investment in human capital.

Ultimately, the transition to a low-carbon economy must be guided by ethical principles that prioritize human well-being alongside environmental sustainability. Although this paper previously refuted utilitarianism as the most appropriate ethical framework for an equitable energy transition—due to its tendency to overlook the needs of marginalized individuals in favor of aggregate outcomes—an ethics of care framework can nonetheless foster utilitarian benefits. By centering the needs of marginalized groups, such as fossil fuel workers and economically fragile communities, policies can reduce suffering while generating widespread social and economic benefits. Marginalized communities can gain access to stable, meaningful employment, while society at large benefits from higher workforce participation, stronger local economies, reduced inequality, and lower public spending on unemployment and social services. Moreover, inclusive, care-focused policies enhance public trust and political support for climate action, accelerating progress toward environmental goals. In this way, ethically grounded transition strategies serve both moral and practical purposes—protecting those most at risk while producing the greatest good for the greatest number.

Region-Specific Strategies for a Just Transition

To ensure ethical integrity in transition policies, governments must adopt a multi-faceted approach that integrates social justice principles into climate action. This requires a commitment to participatory policymaking, in which workers, community members, and marginalized groups have a meaningful voice in shaping transition strategies. Policymakers must also develop robust

safety nets, including income support, retraining programs, and targeted investments in affected regions, to prevent economic shocks from disproportionately harming vulnerable populations. Equally important is the active cooperation of local governments, which must develop complementary policies and implementation strategies tailored to the unique needs and assets of their communities. In addition, transition policies should incorporate metrics for assessing social outcomes, ensuring that their effectiveness is measured not only by emission reductions but also by their ability to improve economic resilience and quality of life for displaced workers.

To ensure that green job creation benefits those most affected by the energy transition, place-based policies must minimize the geographic discrepancy between where fossil fuel jobs are lost and where new clean energy jobs emerge. One promising policy solution to this challenge is the Energy Community Tax Credit introduced in the Inflation Reduction Act (IRA), which offers a powerful tool for incentivizing clean energy development in communities historically tied to fossil fuel industries. By providing a 10% bonus credit for renewable energy projects located in areas that once depended on coal, oil, or gas production, the policy seeks to stimulate economic revitalization, attract private investment, and create local employment opportunities in places most at risk of being left behind in the energy transition. Raimi and Pesek (2022) effectively balance optimism with critique, recognizing the credit's transformative potential while also identifying structural flaws that may undermine its intended impact. They point out that the current geographic criteria for what qualifies as an "energy community" are too broad and imprecise, potentially applying to as much as 42–50% of U.S. land area. This expansive definition could unintentionally channel incentives to regions that are not meaningfully exposed to fossil fuel job losses, while overlooking truly dependent communities like parts of West Texas or North Dakota. To address this, they advocate for a more data-driven,

tiered approach that scales benefits according to a community's actual economic exposure to fossil fuel decline. Key components of improved transition policy should therefore include granular economic targeting, flexible benefit tiers, and a focus on local economic indicators—such as historical energy employment levels or tax dependency—to ensure resources reach the most vulnerable regions. In short, while the Energy Community Tax Credit is a promising step, its effectiveness hinges on how precisely it defines and prioritizes the communities it aims to help.

While federal legislation like the IRA provides historic funding and incentives for decarbonization, its success in delivering both environmental and social outcomes depends heavily on state and local leadership. The Center for American Progress, a credible think tank, has a long-standing reputation for producing policy-focused, research-backed analysis, collaborating with government and community stakeholders, and is frequently cited in legislative and academic discussions on energy, equity, and economic policy. As the Center for American Progress (2023) highlights, states play a critical role in shaping how IRA and Infrastructure Investment and Jobs Act funds are deployed—especially in sectors like transportation, housing, workforce development, and utilities. Without proactive state action, marginalized groups—particularly low-income workers and communities of color—risk being excluded from the economic benefits of the clean energy transition. States must not only apply for available funding but also implement complementary policies that ensure job creation, accessibility, and equity. For example, states like Pennsylvania and Maine are using IRA funds for apprenticeships, training, and union job access. This approach amplifies the impact of IRA dollars while ensuring benefits reach frontline communities. In this way, federal legislation sets the framework—but it is state-

level leadership that determines whether the clean energy transition is equitable, inclusive, and economically transformative for historically underserved populations.

A successful transition away from fossil fuels is not merely an economic process—it is a deeply social and cultural one. Workers in coal, oil, and gas sectors often share a profound sense of identity and pride in their work, rooted in generations of local industry and community resilience. For this reason, transition policies must be governed not just from the top down, but from the community up. While federal funding and frameworks are vital, local governments and community institutions are better positioned to understand their workforce, coordinate support services, and build trust among workers who may be skeptical of outside promises. This local oversight ensures that policies are not only technically feasible but culturally appropriate and trusted. Historically, programs like the TVA demonstrated the limits of federal dominance—despite infrastructure success, the TVA lacked long-term local institutional development and community ownership. If the TVA had been locally owned and governed, it may have been in a better position to align its investments with the long-term needs and characteristics of its regional workforce. Instead, as a federally managed program, the TVA's investments were largely directed toward federally prioritized sectors—most notably manufacturing—that proved fragile once federal subsidies ended. When workers and local leaders are part of the transition's design—defining investment priorities, shaping retraining programs, and guiding redevelopment—they are more likely to trust the process and invest in its success. In short, empowering local governance builds the legitimacy and accountability needed for a durable transition.

Investments in a green future should not only replace lost jobs but rebuild regional economies by supporting the growth of new industries and ensuring that workers can access high-quality, high-wage employment. Central to this approach is the need to reinvest in people—

not just through technical retraining, but by helping workers earn more, attain long-term economic stability, and regain a sense of purpose and dignity in their careers. When these three pillars—place-based economic development, workforce reinvestment, and local governance—are combined, job transition policies can not only ease the pain of industrial decline but also create a foundation for more just, sustainable, and inclusive regional economies.

Conclusion

This paper argues that a truly equitable transition to net-zero emissions must do more than reduce carbon—it must also address the deep social inequalities that fossil fuel workers and marginalized communities face. By embedding the ethics of care into policy design and prioritizing place-based, locally governed solutions, policymakers can craft strategies that are not only ethically grounded but also politically and economically sustainable. This matters because equitable climate policy is not just a moral imperative—it is also a practical necessity for long-term success. The analysis reveals that without targeted reinvestment in affected communities, climate action risks deepening regional divides and fueling resistance to decarbonization efforts. Importantly, this study highlights how ethical frameworks like the ethics of care can produce utilitarian benefits by enhancing social stability, economic resilience, and public trust. Going forward, further research should examine how variations in local governance structures influence implementation outcomes, how cultural identity and labor history shape attitudes toward green jobs, and how overlapping forms of marginalization (e.g., race, gender, geography) create compounded risks during economic transition. These questions are critical to building more inclusive, adaptive, and just climate policy for the future.

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