

JUST TRANSITIONS FOR OIL AND GAS COMMUNITIES

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I. INTRODUCTION

A. The Critical Gap Between the Fossil Present and a Just Future

Begin with two moments in an oil state as the transition away from fossil fuels accelerates. In September of 2020, California Governor Gavin Newsom issued an executive order directing state agencies to start a transition to 100% zero emission new car and truck sales statewide by 2035 and to plan a just transition away from oil and gas.¹ Six months later, in March 2021, Kern County supervisors voted to fast-track the permitting of tens of thousands of new oil and gas wells in California's Central Valley, even as the state government seeks to move away from fossil fuels.² California, like so many states, exists in the political and policy tensions at the end of the oil era.

It is easy to see stories of conflict between state and local planners, of government capture by oil interests, or of climate ambitions warring with incumbent industries. But while those stories may well be true, there is a deeper problem—not just in California but across the world. As environmental authorities rapidly work to reduce demand for oil and gas, jurisdictions across the country lack a just transition framework for communities dependent on producing these resources. Critically, there is no clear legal structure that oil- and gas-dependent communities can use to ensure they are accounted for as the world shifts away from the fuels they have long worked and suffered to produce. Without reform, these communities will likely experience new traumas as polluting industries wind down. At a time when democratic debate and economic planning is urgently needed, the legal landscape is rife with gaps.³

¹ See Cal. Exec. Order No.-79-20 (Sept. 23, 2020). The California Governor's Office of Planning and Research is working to implement this mandate and maintains records of its work at *Just Transition*, GOVERNOR'S OFFICE OF PLANNING AND RESEARCH, <https://opr.ca.gov/economic-development/>.

² See Gabrielle Canon, 'Kern Runs on Oil': As California Confronts Climate Crisis, One County is Ready to Drill, *GUARDIAN* (Mar. 12, 2021), <https://www.theguardian.com/us-news/2021/mar/12/kern-oil-field>. See also Alexandria Herr, *California Plans to Phase Out All Oil and Gas Production by 2045*, *GRIST* (Apr. 27, 2021), <https://grist.org/equity/california-plans-to-phase-out-all-oil-and-gas-production-by-2045/>.

³ This gap is substantiated in a recent comprehensive literature review. See Sandeep Pai et al., *A Systematic Review of the Key Elements of a Just Transition for Fossil Fuel Workers* (Smart Prosperity Inst., Working Paper No. WP 20-04, 2020), <https://institute.smartprosperity.ca/sites/default/files/transitionforfossilfuelworkers.pdf>. As scholars affiliated with the Smart Prosperity Institute write, "so far, just transition studies have largely focused on coal workers. That is partly justified given the carbon footprint of coal, but future studies could focus on enhancing the field and understanding of just transition by focusing on oil and gas workers and comparing

These gaps are emphatically *not* news to workers, community members, and the burgeoning environmental justice and labor movements that have called for change.⁴ Calls for a just transition are deeply rooted in movement work that has envisioned a better world for years and which now presses for urgent change.⁵ However, the law's record of providing for this path forward is mixed at best, with particularly striking gaps in resource extraction communities—gaps which will be of enormous legal and political importance as the shift away from oil and gas accelerates. Constructing a path away from fossil fuels that can sustain workers and communities will require creating legal structures that do not yet exist. I seek to draw upon the clear needs articulated by communities around the world, and reflected in a growing body of scholarship, to highlight and fill these gaps in the oil and gas transition framework. Such a discussion is of critical importance given the central role of these fossil fuels in the global climate crisis. This article is among the first legal academic pieces to explore these gaps in the context of ensuring a just transition for oil and gas communities and to offer practical solutions—drawn from across the emerging just transitions literature and translated into legally implementable options using California as an example—to begin to fill in these looming dislocations.

This is an important moment to advance the conversation. In the United States, Congressional proposals for the transition are proliferating,⁶ and President Biden has just implemented a government-wide response to the climate crisis that includes multiple programs dedicated to “empowering workers” and creating jobs.⁷ Yet, even

across fossil fuels and across fossil fuel-intensive sectors.” *Id.* at 34. I agree, hence this first contribution.

⁴ See J. MIJIN CHA ET AL., LABOR NETWORK FOR SUSTAINABILITY, WORKERS AND COMMUNITIES IN TRANSITION: REPORT OF THE JUST TRANSITION LISTENING PROJECT 2, 19(2021), https://labor4sustainability.org/files/JTLP_report2021.pdf (offering a richly nuanced set of voices from communities in transition).

⁵ For a structured policy framework outlining ideas of what such change could look like, developed by activists across the country, see U.S. CLIMATE ACTION NETWORK, VISION FOR EQUITABLE CLIMATE ACTION (May 2020), <https://equitableclimateaction.org/wp-content/uploads/2020/05/Vision-for-Equitable-Climate-Action-May-2020-final-1.pdf>. For a sense of movement strategies and debates, see John Cox, ‘Just Transition’ Advocates Revisit Anti-Oil Campaign After Defeat in Sacramento, BAKERSFIELD.COM (Apr. 22, 2021), https://www.bakersfield.com/news/just-transition-advocates-revisit-anti-oil-campaign-after-key-defeat-in-sacramento/article_ed248e6c-a2cc-11eb-99a1-174514a3efe2.html.

⁶ For instance, Congressman Mark DeSaulnier of California has recently proposed several transition-focused measures for oil and gas industries. See *Congressman DeSaulnier Unveils Energy Transition Model*, CONGRESSMAN MARK DESAULNIER (Mar. 8, 2021), <https://desaulnier.house.gov/media-center/press-releases/congressman-desaulnier-unveils-energy-transition-model>.

⁷ Exec. Order No. 14,008, 86 Fed. Reg. 7619, 7626–29 (Feb. 1, 2021). The Biden Administration has also reached an initial report on just transition needs in coal country, whose

President Biden’s visionary Executive Order reflects the gap I have articulated. It creates an “Interagency Working Group on *Coal and Power Plant* Communities and Economic Revitalization” which reports to the President only on “the economies of coal and power plant communities,” although “oil and gas” communities are noted in an aside for additional consideration).⁸ This oversight is indicative of the lack of sustained government attention for oil and gas communities, and legal structures, as we will see, reflect this neglect. For too long, the law of oil and gas has focused on extraction, or, at best, pollution reduction. Meanwhile, community and worker protection have been insufficiently considered.

To identify and remedy these issues, I proceed in three steps. After a further introductory survey of the landscape, I first turn to a careful review of just transition literature globally, seeking to extract key lessons and principles which can be used to remedy the situation and to highlight current needs. Second, I turn to the oil and gas gap specifically, explaining its nature and positing how it may impede the transition away from fossil fuels. I then offer specific remedies for this gap, using California—where the transition is accelerating with particular speed—as an example. I also suggest several mechanisms, including Just Transition Trusts, Bonds, and Revenue Sequesters, which can help ensure that private and public capital is present to help communities transition. In addition, I suggest governance mechanisms for these funds that are rooted in lessons from environmental democratic reform literature and practice. Finally, generalizing from these examples and tools, I offer both practical and theoretical lessons going forward, as we collectively face the transition and begin to reform our law and politics.

B. Introductory Context—A Survey of the Landscape

Although we know that most remaining oil and gas cannot be extracted, processed, and burned if we are to have a stable climate,⁹ there is no comprehensive legal framework for sustaining communities which are now heavily dependent on these industries. Despite the emerging

conclusions (including a focus on economic redevelopment) are broadly consistent with the suggestions in this paper. *See generally* INTERAGENCY WORKING GRP. ON COAL AND POWER PLANT CMTYS., INITIAL REPORT TO THE PRESIDENT ON EMPOWERING WORKERS THROUGH REVITALIZING ENERGY COMMUNITIES (Apr. 2021), https://netl.doe.gov/sites/default/files/2021-04/Initial%20Report%20on%20Energy%20Communities_Apr2021.pdf.

⁸ *See* Exec. Order No. 14,008, 86 Fed. Reg. at 7628–29 (emphasis added).

⁹ For a sense of global limits on further emissions, which lead to this conclusion, *see generally* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, GLOBAL WARMING OF 1.5°C: SUMMARY FOR POLICYMAKERS, (2018).

consensus that a “just transition” is warranted for such places¹⁰ in order to care for workers and communities losing large chunks of their tax bases,¹¹ the law neither obligates fossil companies to provide a transition nor offers a ready-made forum in which we might contest what a transition could mean. In the United States, with its labor movement limited by years of attacks, limited welfare state, and fragmented governance structures, this means that workers and communities are very likely to suffer far more than fossil fuel companies during the transition unless we actively work to create a legal framework that will support a different political settlement. There is a democratic gap at the heart of the transition, as communities and workers lack obvious specialized fora in which to shape their futures.

Oil and gas communities are particularly vulnerable under American law. The contrast is starkest with power plant communities, which at least benefit from a (still far from adequate) utility regulatory structure that can organize just outcomes for the public benefit. Communities dependent on power plants can often press their case for transition assistance through public utility commissions.¹² However imperfect these fora are, legal mechanisms at least exist to manage shutdowns for coal-fired power plants. Yet, even though oil and gas dominate U.S. emissions,¹³ substantially equivalent mechanisms are absent for these most dominant fossil fuels in most contexts. Oil and gas wells face some cleanup

¹⁰ See, e.g., Ann M. Eisenberg, *Just Transitions*, 92 S. CAL. L. REV. 273 (2019) (discussing the history of the concept, and its theoretical justifications); David J. Doorey, *Just Transitions Law: Putting Labour Law to Work on Climate Change*, 30 J. OF ENV'T L. & PRAC. 201 (2017) (describing this emerging area of law).

¹¹ The support needed is estimated in Robert Pollin & Brian Callaci, *The Economics of Just Transition: A Framework for Supporting Fossil-Fuel Dependent Workers and Communities in the United States*, 44 LAB. STUD. J. 93, 94 (2019).

¹² See, e.g., Alan Ramo & Deborah Behles, *Transitioning a Community Away from Fossil-Fuel Generation to a Green Economy: An Approach Using State Utility Commission Authority*, 15 MINN. J.L. SCI. & TECH. 505 (2014). For a discussion of the importance of democratic planning in the power sector transition context, see Shelley Welton, *Electricity Markets and the Social Project of Decarbonization*, 118 COLUM. L. REV. 1067 (2018). There are also some protections for coal mining communities, though these are more limited, and lack the general public focus of utility commission regulation. See generally 30 U.S.C. §§ 1201 *et seq.* (codifying the Surface Mining Control and Reclamation Act of 1977, which establishes reclamation programs for the surface coal mines which dominate the U.S. coal mining sector).

¹³ The most recent figures from U.S. EPA, put emissions from transportation fuels – which are almost entirely oil and gas – at 1,817 million metric tons CO₂e, which are larger even than emissions from the power sector. Emissions from refining and from oil and gas extraction add several hundred million metric tons to this total and emissions from residential and industrial combustion of oil and gas add hundreds of millions more. With the decline of coal power, oil and gas emissions are simply paramount. See U.S. EPA, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2019, Doc. No. EPA 430-R-21-005, at ES-7–ES-9 tbl. ES-2 (2021), <https://www.epa.gov/sites/default/files/2021-04/documents/us-ghg-inventory-2021-main-text.pdf>.

requirements, but there is no equivalent of a public utility commission that can work to make communities whole (or at least stop economic free fall) when fields close or when refineries shut down. If decarbonization is ultimately a question of political choices,¹⁴ we should be troubled by this gap for both normative and pragmatic reasons.¹⁵

After all, decarbonization does not happen in a void. Shifting power sources means shifting fortunes for particular places. Just as the global move away from fossil fuels may mean wind turbines turning on a particular ridgetop, or solar panels emplaced on a particular plain, it also means that a refinery in the heart of a community long involved in fossil fuel production may close, that oil or gas wells may ultimately sit idle, in their thousands, across newly abandoned industrial landscapes. Neither shift is likely to be straightforward. Even as some communities may wrestle with displacements caused by new development,¹⁶ others may find themselves without major employers or major sources of tax revenue to support social services¹⁷—along with large areas of contaminated real estate that cannot readily be reclaimed.¹⁸

Unlike past energy transitions, like that from animal, human, and water power to fossil power, this energy transition is even more policy driven and has a necessary timetable; it is a conscious choice driven by the need to avoid catastrophic climate change.¹⁹ Because we are, collectively,

¹⁴ Many of these choices are set out in Shelley Welton & Joel Eisen, *Clean Energy Justice: Charting an Emerging Agenda*, 43 HARV. ENV'T L. REV. 307 (2019). Professor Shalanda Baker also makes a forceful argument that rethinking our current political arrangements is critical to the transition in her work. See Shalanda H. Baker, *Anti-Resilience: A Roadmap for Transformational Justice Within the Energy System*, 54 HARV. CIV. RTS.–CIV. LIBERTIES L. REV. 1 (2019).

¹⁵ See Eisenberg, *supra* note 10, for a critical analysis of many of these rationales. Professor J. Mijin Cha extends these arguments in her compelling papers. See, e.g., J. Mijin Cha, *A Just Transition: Why Transitioning Workers into a New Clean Energy Economy Should Be at the Center of Climate Change Policies*, 29 FORDHAM ENV'T. L. REV. 196 (2017).

¹⁶ See, e.g., Leah Temper et al., *Movements Shaping Climate Futures: A Systematic Mapping of Protests Against Fossil Fuel and Low-Carbon Energy Projects*, 15 ENV'T. RSCH. LETTERS 123,004 (2020) (describing substantial protests against low-carbon developments); Shalanda H. Baker, *Fighting for a Just Transition*, 52 NACLA – REP. ON THE AMERICAS 144 (2020) (describing such movements in Oaxaca).

¹⁷ See, e.g., Pollin & Callaci, *supra* note 11, for a sense of these disruptions.

¹⁸ For a detailed discussion of many of the challenges ahead, see GREG KARRAS, DECOMMISSIONING CALIFORNIA REFINERIES: CLIMATE AND HEALTH PATHS IN AN OIL STATE (2020), <https://www.energy-re-source.com/decomm>. In California, for instance, such sites will be scattered throughout several cities, as refineries occupy a large portion of city real estate in the Bay Area, in the Bakersfield, and in the port regions of Los Angeles, among other regions. See CAL. ENERGY COMM'N, CALIFORNIA'S OIL REFINERIES (Jan. 1, 2021), <https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries>.

¹⁹ See Peter Newell & Andrew Simms, *How Did We Do That? Histories and Political Economies of Rapid and Just Transitions*, NEW POL. ECON. (2020) (making this point and gathering examples of prior transitions).

choosing to cause these effects,²⁰ we have a particularly strong obligation to help affected communities maintain their own ability to choose a better future rather than be sacrificed to it.²¹

To be sure, this is no simple arrangement of winners and losers. The same communities now dependent on fossil fuels have also suffered from them and have taken pioneering actions to begin the transition themselves.²² These communities bear the brunt of energy sources that emit large amounts of air and water pollution with health consequences to match.²³ America's long history of racist land use means that these harms have fallen disproportionately on Black, Indigenous, and Hispanic communities,²⁴ which often lack financial resources and—dominated by polluting industry—may struggle to attract diversified investments.²⁵ Therefore, the removal of these industries is, in some regards, a boon, and is often advocated for by community groups. Indeed, it is community groups, ranging from statewide networks²⁶ to local activists,²⁷ who have been at the forefront of the transition for years. To the degree this article is able to identify a gap in our law, it is because of the visionary work of groups like these. These visions, however, need dedicated economic planning and financial support to offer a fiscally feasible path forward.²⁸ This article poses the question: how can we provide legal support for a vision that communities increasingly articulate for themselves?

In addition, there is no guarantee that new “green” industries will in fact equitably benefit the communities in which they are situated.

²⁰ *See id.*

²¹ *See* Martin David, *Moving Beyond the Heuristic of Creative Destruction: Targeting Exnovation with Policy Mixes for Energy Transitions*, 33 ENERGY RSCH. & SOC. SCI. 138 (2017) (gathering examples of policy choices that can serve this purpose and arguing for their use).

²² *See* Baker, *supra* note 14 (compellingly describing these challenges).

²³ *See id.*

²⁴ For a description of these effects in the power sector, which are parallel to those in oil and gas sectors, *see* ADRIAN WILSON ET AL., NAT'L ASSOC. FOR THE ADVANCEMENT OF COLORED PEOPLE, COAL BLOODED: PUTTING PROFITS OVER PEOPLE, (2016), <https://naacp.org/resources/coal-blooded-putting-profits-people>.

²⁵ *See* KARRAS, *supra* note 18, at 72–76 (flagging transition concerns and suggesting remedies).

²⁶ The California Environmental Justice Alliance (CEJA) is a particularly compelling example of a group focused on both environmental and economic justice. *See Mission and Vision*, CALIFORNIA ENVIRONMENTAL JUSTICE ALLIANCE, <https://caleja.org/about-us/vision-and-history/>.

²⁷ Communities for a Better Environment, for example, has spent years advocating for change in Richmond, California, with a particular focus on the enormous refinery there. They offer a holistic vision for change. *See Beyond Chevron: Our Vision for Richmond*, CMTY'S FOR A BETTER ENV'T, <https://www.cbecal.org/organizing/northern-california/richmond/beyond-chevron-our-vision-for-richmond/>.

²⁸ Richard Revesz makes a compelling argument that executive agencies must account for these distributive effects in their policy designs in a recent piece. *See* Richard L. Revesz, *Regulation and Distribution*, 93 N.Y.U. L. REV. 1489, 1555–66 (2018).

Electrification often comes with a push for automation,²⁹ threatening jobs—and the mere fact that a company makes “clean” technology does not mean that its factories, or supply chains, will be labor friendly.³⁰ Renewable facilities may threaten Indigenous land rights³¹ or simply send their profits elsewhere. Some of the very large-scale land use choices that are potentially necessary to sequester carbon dioxide from the atmosphere may have disruptive consequences.³² No part of the transition automatically guarantees equity; securing it requires action.

In short, the “Green” and “New Deal” components of the political vision so compelling to many are distinct, and they require sustained political and legal effort to couple them.³³ America, if anything, is predisposed to decarbonize while paying short shrift to workers and communities. A country that allowed the minimum wage to languish at \$7.25 an hour for years while the prices of basic goods spiked,³⁴ that failed to protect essential workers in the pandemic,³⁵ and that has seen the rise of a piecemeal “gig” economy actively hostile to workers,³⁶ is not one that will readily fund communities and workers during a move away from fossil power without political organizing that can create legal structures mandating just action. The status quo does not offer a viable new deal for communities affected by either failing or rising industries; a dilemma that is acute for communities near oil and gas fields and near oil refineries. These communities have already disproportionately borne the

²⁹ For a sketch of these challenges, see Sam Abuelsamid, *Electrification and Automation Will Transform the Future of Trucking*, AUTOMOTIVE WORLD (Sept. 9, 2019), <https://www.automotiveworld.com/articles/electrification-and-automation-will-transform-the-future-of-trucking/>.

³⁰ See, e.g., Faiz Siddiqui, *Tesla and CEO Elon Musk Violated Federal Labor Law, Judge Rules*, WASH. POST (Sept. 27, 2019), <https://www.washingtonpost.com/technology/2019/09/28/tesla-ceo-elon-musk-violated-federal-labor-law-judge-rules/>; Russ Mitchell, *Tesla Had Worse Safety Record than Slaughterhouses and Sawmills, But Says It's Improving*, L.A. TIMES (May 24, 2017), <https://www.latimes.com/business/autos/la-fi-hy-tesla-workplace-safety-20170524-story.html>.

³¹ See Baker *supra* note 16.

³² See, e.g., Mathilde Fajardy et. al., *BECCS Deployment: A Reality Check*, 28 GRANTHAM INST. BRIEFING PAPER 1 (2019) (describing many of these challenges for bioenergy with carbon capture and sequestration (BECCS) which is a leading candidate for this atmospheric carbon removal process), <https://www.imperial.ac.uk/media/imperial-college/grantham-institute/publications/briefing-papers/BECCS-deployment—a-reality-check.pdf>.

³³ A vision for a legal project recognizing these realities is set out in Brigham Daniels et al., *Just Environmentalism*, 37 YALE L. & POL'Y REV. 1 (2018).

³⁴ See *Why the U.S. Needs a \$15 Minimum Wage*, ECON. POL'Y INST., (Jan. 26, 2021), <https://www.epi.org/publication/why-america-needs-a-15-minimum-wage/>.

³⁵ See, e.g., *Editorial: The Plight of Essential Workers During the Covid-19 Pandemic*, LANCET (May 23, 2020), [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31200-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31200-9/fulltext).

³⁶ See, e.g., Michael Sainato, *'I Can't Keep Doing This': Gig Workers Say Pay Has Fallen After Passage of California's Prop 22*, GUARDIAN (Feb. 18, 2021), <https://www.theguardian.com/us-news/2021/feb/18/uber-lyft-doordash-prop-22-drivers-california>.

consequences of the fossil era. Now they risk being left behind as their dominant industries become obsolete, with no clear legal remedy.

But that is not the only possible future. This article proceeds from the premise that communities can organize politically to change their legal landscape³⁷ and that now is the time to start putting better legal structures in place. In this article, I suggest that one important determinant of the path forward is whether communities that rely on extractive industry income can construct legal mechanisms that allow them to participate as actors in the coming transition—decisional tools that can help steer the course of facility shutdowns and decommissioning and which, critically, can provide public funds to finance communities in transition. I point to a range of potential legal and financial mechanisms that communities may be able to use to chart their courses, including referenda and statutes that can transfer funds from private fossil companies, which have played such a large role in so many communities, to public use. I suggest that these mechanisms are critical to the environmental agenda because they offer a path forward for a just transition on the ground by putting funds in the hands of the communities that have powered society for so long, thereby empowering them to move forward.

II. JUST TRANSITIONS—CONCEPTS AND MIXED OUTCOMES

A. Just Transitions as Challenges to Established Power Arrangements

As we begin to consider remedies available to oil and gas communities, it is useful first to think about calls for a “just transition” as a subset of larger labor movement efforts to restrain business abuses—to, in effect, make capital less liquid by tethering economic choices to the needs of particular places and people.³⁸ Viewed through this lens, the just transition effort around climate change can be seen as fundamentally linked to other efforts to protect individual communities, such as federal support for workers displaced by trade deals that shift production sites,³⁹ economic redevelopment efforts at state and local levels,⁴⁰ health care and

³⁷ Indeed, the idea that capital choices are subordinate to democratic decisions is critical to the just transition premise and ties this conversation to the centuries-long tug-of-war between capital and labor in the law. See Navraj Singh Ghaleigh, *Just Transitions for Workers: When Climate Change Met Labour Justice*, (Univ. of Edinburgh Sch. of L. Working Paper No. 2019/30, 2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3456148.

³⁸ See *id.* for a discussion of this point from a theoretical perspective.

³⁹ See, e.g., 19 U.S.C. §§ 2271 *et seq.* (providing federal trade adjustment assistance for workers).

⁴⁰ See generally Carmen Huertas-Noble et al., *The Greening of Community Economic Development: Dispatches from New York City*, 31 W. NEW ENG. L. REV. 645 (2009) (describing such efforts).

wage reform, community-benefit measures, and other similar measures intended to ensure that developments broadly support their neighborhoods. The success of such efforts is ultimately strongly determined by whether organizers can secure or extend legal frameworks that can guarantee financial flows to specific workers and communities. I will argue below that it is particularly important to ensure that funds flow from the businesses themselves towards critical community services and needs, to tie together business and community fortunes to avoid capital flight and to avoid overtaxing limited public funds. Essentially, communities should not be left holding the bag for fossil companies.

This argument is rooted in the historical development of the “just transition” concept. This is fundamentally a worker protection concept that has gradually expanded to embrace entire communities,⁴¹ if not further, as some use the phrase to call for wholesale societal shift in values away from market capitalism.⁴² The phrase originates from the labor movement, driven by organizer Tony Mazzocchi, a leader of the Oil, Chemical, and Atomic Workers Association, a fierce advocate for worker safety (he was, among other things, a strong advocate for the creation of OSHA, the Occupational Safety and Health Administration), and an ally of the environmental movement.⁴³ That the concept arose from the labor movement—with its clear focus on organizing, rebalancing, and challenging power, and on ensuring that everyday people’s daily lives are good ones—should guide us as we consider how to apply the concept in the climate context.

The concept dates at least to the 1970s and appears to have taken on some of its modern framing in the early 1990s as climate concerns gained increasing political salience.⁴⁴ Mazzocchi’s own justification of the

⁴¹ See Eisenberg, *supra* note 10. See also Jonas J. Monast, *The Ends and Means of Decarbonization: The Green New Deal in Context*, 50 ENV’T. L. 21 (2020) (describing a range of just transition or green new deal conceptualizations).

⁴² For a taste of this more radical discourse, see Damian F. White, *Ecological Democracy, Just Transitions, and a Political Ecology of Design*, 28 ENV’T VALUES 1 (2019) (describing a range of ways to re-imagine political systems to accommodate deep ecological changes). A full theoretical treatment of non-capitalist, local, political science options for responses to climate change is also set out in GEOFF MANN & JOEL WAINWRIGHT, *CLIMATE LEVIATHAN: A POLITICAL THEORY OF OUR PLANETARY FUTURE* (2018). Mann and Wainwright argue, compellingly, that our economic systems will tend towards economically efficient but democratically unfree solutions – such as mobilizing large amounts of clean technology under corporate or (in the case of China) corporate-state control – in the absence of legal and movement correction.

⁴³ The Tony Mazzocchi Center, a project of the United Steelworkers, maintains a biography of Mazzocchi. See *Tony Mazzocchi*, TONY MAZZOCCHI CENTER, <https://uswtmc.org/about-us/tony-mazzocchi>.

⁴⁴ CHRISTINA ROESSLER ET AL., LABOR NETWORK FOR SUSTAINABILITY, “JUST TRANSITION” – JUST WHAT IS IT? AN ANALYSIS OF LANGUAGE, STRATEGIES, AND PROJECTS 7–8 (2016), https://ecology.iww.org/PDF/LNS/JustTransitionReport-FINAL.pdf?bot_test=1.

concept is worth quoting in full: “There is a Superfund for dirt. There ought to be one for workersPaying people to make the transition from one kind of economy - from one kind of job - to another is not welfare.”⁴⁵ As Christina Roessler elaborates in a thoughtful report quoting past and present environmental and labor leaders on the formulation, “[t]hose who work with toxic materials on a daily basis in order to provide the world with the energy and the materials it needs deserve a helping hand to make a new start in life.”⁴⁶ The conception, in short, is about shared responsibility—about the social and public debt society owes to labor.

The “Superfund for Workers” phrasing (for which the term “just transition” was ultimately substituted) and the initial focus on the toxic burden borne by particular people are not just historical artifacts—they are a useful model for current efforts in that they focus attention on making private capital public and on the need to help specific people who have borne prior costs. “Superfund”—established as a surcharge primarily on oil and chemical companies to fund contaminated site cleanups—is in this sense a cautionary tale, because when the fund itself was allowed to lapse, the burden of cleanups was shifted onto public funds.⁴⁷ In fact, the Superfund statute, and related federal waste statutes, explicitly waive liability for many oil and gas products and activities, meaning that communities reliant on oil and gas production face an even larger burden than many others covered by Superfund itself.⁴⁸ Avoiding a similar fate for worker and community protection efforts should be a central focus and a target for legal and political development.

This claim may need some defense—after all, haven’t public policies disfavoring fossil fuels forced the hand of private fossil companies? One might think that it is perfectly reasonable for public funds alone to repair the damage left behind by public policy. To the degree that this view would support *additional* public support for the transition, I have no quarrel with it. Indeed, there will ultimately be no substitute for the comprehensive planning and long-term support that only governments

⁴⁵ *Id.* at 7.

⁴⁶ *Id.* (internal quotation omitted).

⁴⁷ See, e.g., *As Tax Expires, EPA Struggles to Clean-Up Superfund Sites*, NPR (Aug. 6, 2010), <https://www.npr.org/templates/story/story.php?storyId=129034359>.

⁴⁸ The nonprofit group Earthworks has produced a harrowing recounting of these many exemptions in a recent report; the existence of this set of regulatory gaps and liability waivers intensifies the burden on communities across the country, which may be unable, as a result, to seek regulatory correction of abandoned sites. Alas, though written in 2007, the report is still largely current as to these waste exemptions. See RENEE LEWIS KOSNIK, *THE OIL AND GAS INDUSTRY’S EXCLUSIONS AND EXEMPTIONS TO MAJOR ENVIRONMENTAL STATUTES* (2007), <https://www.earthworks.org/cms/assets/uploads/archive/files/publications/PetroleumExemptions1c.pdf>.

can provide.⁴⁹ Further, private financing models will likely be most fair and effective when funds flow through public bodies, as I argue below. But for both normative and practical reasons, there are good reasons not to let companies off the hook either.

On the normative side, the University of South Carolina's Professor Eisenberg provides a useful synthesis. She recounts the complex history of monopolistic capture that has led to many communities—especially poor or minority communities lacking the political power to effectively to resist—fundamentally functioning as quasi-resource colonies or sacrifice zones for fossil extraction.⁵⁰ Whether it is the disproportionate siting of industrial facilities in minority communities in California,⁵¹ or the long, sad story of the exploitation of Appalachian communities for coal production,⁵² the narrative of sacrifice recurs. Put simply, the landscape of fossil extraction was crafted through political power and neglect and has been heavily exploited by fossil companies. The fact that most modern environmental pollution statutes lack significant distributive justice or cumulative impact provisions which could have prevented or mitigated this outcome certainly reflects a governance failure.⁵³ But it remains the case that fossil companies have also affirmatively exploited, and sought to extend, governance failures that have promoted their economic interests.⁵⁴ As Eisenberg writes, though one would be “hard-pressed to disentangle the diverse public and private factors that converge to shape discrete sectors, especially in the energy context,”⁵⁵ it remains the case that:

fossil fuel communities have already borne loss after loss to the benefit of others. To ask them to bear yet another disproportionate loss in the clean-energy transition on behalf of the rest of society would be to effectuate yet another distributive injustice. In other words, these communities should not be forgotten in the decarbonization calculus.⁵⁶

⁴⁹ For a detailed argument on the indispensable nature of public planning and governance of just transitions, see J. Mijin Cha et al., *Environmental Justice, Just Transition, and a Low-Carbon Future for California*, 50 ENV'T. L. REP. 10,216, 10,221–24 (2020).

⁵⁰ See Eisenberg, *supra* note 10, at 300–08.

⁵¹ See, e.g., LARA J. CUSHING ET AL., A PRELIMINARY ENVIRONMENTAL EQUITY ASSESSMENT OF CALIFORNIA'S CAP-AND-TRADE PROGRAM (2016) (noting these inequities).

⁵² For a discussion of this history, and an argument for affirmative redress, see Patrick R. Baker & Blake Tims, *Coal Shines a Light on the Need for a Just Energy Transition in the U.S.*, 27 BUFFALO ENV'T L. J. 87 (2020).

⁵³ See *infra* note 85 and accompanying text.

⁵⁴ See *infra* note 68.

⁵⁵ Eisenberg, *supra* note 10, at 304.

⁵⁶ *Id.* at 308. This is a broadly held view in the emerging environmental law literature on just transitions. For similar arguments, see, e.g., Uma Outka, *Fairness in the Low-Carbon Shift*:

On this view, both public and private entities bear responsibility for the current state of affairs; accordingly, both sets of entities bear responsibility for the transition. Labor law scholars further this view. One such scholar, Paolo Tomasetti, writes that to the degree that labor law is ultimately concerned with redistributing and regulating economic power, it provides a strong theoretical grounding for preventing private economic interests from leaving communities affected by fossil extraction behind.⁵⁷ As Tomasetti puts it, “[b]oth selective and universal goals of labor law converge with the principle of sustainability to the extent that they have an impact on the root causes of the environmental crisis, i.e. human and social hierarchies and vulnerabilities.”⁵⁸ Indeed, labor scholar David Doorey wrote an elegant paper on tensions and areas of possible collaboration between environmental and labor law, recognizing that both bodies of law are interested in regulating distributive injustices, albeit from different perspectives.⁵⁹ Doorey identifies shared normative claims concerned with protecting those who “experience economic subordination and who through various means resist it,”⁶⁰ with promoting flourishing human capacities rather than mere economic efficiency,⁶¹ and ultimately an emerging body of “just transitions law” rooted in three normative claims:

Firstly, climate change is a pressing global problem that market forces alone will not adequately address. Therefore, states should respond through public policy and law Secondly, public policy should encourage a transition towards “greener”, lower carbon economies Thirdly, there will be social and economic costs and benefits associated with climate change, and with the transitional policies aimed at responding to it, and those costs and benefits will also not be equitably distributed by market forces alone. Therefore, governments should seek to minimize the economic and social harms associated with the desired transition to a greener economy, and attempt, through law and policy, to

Learning from Environmental Justice, 82 BROOK. L. REV. 789 (2017) (arguing that equity considerations should drive industrial policy); *but see* Nicholas S. Bryner, *The Green New Deal and Green Transitions*, 44 VT. L. REV. 723 (2020) (observing that industry groups can also capture transition funding and planning to unduly extend transitions or divert resources away from communities or workers).

⁵⁷ See generally Paolo Tomassetti, *Labor Law and Environmental Sustainability*, 40 COMP. LAB. L. & POL’Y J. 61 (2018).

⁵⁸ *Id.* at 83–84.

⁵⁹ See Doorey, *supra* note 10, at 220–22.

⁶⁰ *Id.* at 224.

⁶¹ *Id.* at 227–30.

distribute those harms and any resulting benefits in an equitable manner.⁶²

This network of normative claims would doubtless be familiar to Tony Mazzocchi, and my own argument proceeds from a similar view of the necessity for state intervention to shape the behavior of private capital to promote just outcomes.⁶³

There is also a strong practical justification for such views. Put in bare terms, if communities and workers are abandoned in the shift away from fossil fuels, some of them will resist that shift. And arguments, sincere or not, to “protect” them by delaying or stopping the transition will be available to the same fossil companies that have benefitted from the current state of affairs. To be sure, many communities and workers are also *calling for* a shift away from fossil fuels; my point is not to suggest communities are uniformly an impediment. It is only to observe that, without just support for change, change will be even harder and may result in alliances with existing economic actors. It is not uncommon, for instance, for labor interests to align with fossil interests in the absence of competing policy arrangements.⁶⁴ Such alignments are not borne of ignorance; they are more likely rooted in realpolitik assessments that government institutions are unprepared or unwilling to offer sufficient transition assistance, either from public funds or by capturing private capital. In such circumstances, we should expect the transition to be opposed (and rightly so) by those who will not benefit.⁶⁵ As one useful paper on the inherently social and political challenges posed by these transitions puts it, “the key choices involved in energy transitions are not so much between different fuels but between different forms of social, economic, and political arrangements built in combination with new

⁶² *Id.* at 234.

⁶³ For a more theoretical perspective on where similar claims lead in constructing alternative ideologies to challenge free market dominance, see Harald Winkler, *Towards a Theory of Just Transition: A Neo-Gramscian Understanding of How to Shift Development Pathways to Zero Poverty and Zero Carbon*, 70 ENERGY RSCH. & SOC. SCI. 101,789 (2020).

⁶⁴ See, e.g., Noel Healy & John Barry, *Politicizing Energy Justice and Energy System Transitions: Fossil Fuel Divestment and a “Just Transition”*, 108 ENERGY POL’Y 451, 453–54 (2017) (“In the US, for example, fossil fuel corporations help shape US energy policies and influence energy transition options, effectively ensuring carbon lock in from which of course they benefit. Overcoming this carbon lock-in requires confronting corporate energy power . . . Labor unions have historically sought to influence the distribution of benefits and harms within energy systems by advocating and seeking just distribution, recognition and participation largely within the existing fossil fuel (and nuclear) energy systems. This has often led to them defending fossil fuel (and nuclear energy) jobs against environmental arguments and moves toward a decarbonized energy system.”) (internal citations omitted).

⁶⁵ For a further argument about the necessity of considering social dimensions and political power in designing transition regimes, see Clark A. Miller et al., *The Social Dimensions of Energy Transitions*, 22 SCI. AS CULTURE 135 (2013).

energy technologies.”⁶⁶ The technological transition will meet political resistance unless these arrangements are properly accounted for.⁶⁷

Do not underestimate the power of political resistance. Fossil companies actively mobilize equity and employment concerns to defend their interests. In a recent book analyzing retrenchments in state energy policy, Professor Leah Stokes recounts in troubling detail how interest group mobilization by fossil interests is central to slowing the energy transition.⁶⁸ Stokes demonstrates that corporate funding of “astroturf” campaigns to shift public opinion⁶⁹ or to create the impression that public opinion has shifted is extensive and effective.⁷⁰ This industry messaging tends to focus on the purported cost and job impacts of the energy transition. Recently, retrenchment efforts in multiple states, supported by cross-state networks of opponents of the transition, have succeeded in reversing major renewable energy policies.⁷¹

Oil and gas companies are entirely capable of such efforts, and have recently employed them successfully to defeat carbon pricing and transition proposals, including in Washington state.⁷² Gas utilities are also currently being investigated in California for improperly funding front groups using equity claims for disingenuous profit-protecting purposes on behalf of those companies to slow the transition in the state.⁷³ Their efforts included threats during the recent pandemic to bus in paid “protesters”—compensated members of the public who were offered a check by the gas company to adopt its views—from Los Angeles to oppose building electrification mandates in a community over a hundred

⁶⁶ *Id.* at 139.

⁶⁷ Scholars at Imperial College, London have compiled a very helpful review paper on technological and energy transitions that ultimately makes this point, demonstrating that social planning for change, and to address its distributive consequences, is central to effective transitions. See Ajay Gambhir et al., *Towards a Just and Equitable Low-Carbon Transition* 26 GRANTHAM INST. BRIEFING PAPER 1 (2018). As they put it, “[e]arly implementation of policies and strategies to enable a managed decline of industries, supported by a long-term vision to promote the growth of new industries” are central to successful transitions. *Id.* at 13.

⁶⁸ See generally LEAH CARDAMORE STOKES, *SHORT-CIRCUITING POLICY* (2020).

⁶⁹ For a troubling example of these astroturf campaigns, see Ann Alexander, *AB 345: Please Keep Off the Astroturf*, NRDC EXPERT BLOG (June 23, 2020), <https://www.nrdc.org/experts/ann-alexander/ab-345-please-keep-astroturf>.

⁷⁰ See STOKES, *supra* note 68, at 7–12 (describing interest group politics), 6166 (providing a detailed description of corporate strategies).

⁷¹ See *id.* at 206–21 (describing operation of one of these networks in undermining and reversing clean energy policy in Ohio).

⁷² See Marianne Lavelle, *How Big Oil Blocked the Nation’s Greenest Governor on Climate Change*, INSIDE CLIMATE NEWS (Sept. 10, 2019), <https://insideclimatenews.org/news/10092019/big-oil-money-blocked-jay-inslee-climate-change-policy-carbon-fee-bp-washington>.

⁷³ See, e.g., Molly Peterson, *SoCalGas Admits Funding ‘Front’ Group in Fight for its Future*, KQED (July 31, 2019), <https://www.kqed.org/science/1945910/socalgas-admits-funding-front-group-in-fight-for-its-future>.

miles away.⁷⁴ We can thus expect our sincere and deeply felt concern over transitions that leave communities and workers unprotected to be swiftly mobilized by private interests seeking to continue maximizing fossil energy production. This mobilization comes at a high long-term cost to communities that now exist in an uneasy but dependent relationship with these companies. Defusing this political dynamic will require political and legal arrangements that can stop this “community capture” by fossil incumbents.

In sum, both these normative and practical considerations militate for just transition policies that can protect both company workers and the larger communities during a fossil transition, consistent with the International Labor Organization (ILO)’s understanding of just transitions needs. The ILO’s 2015 Guidelines on the topic connect the just transition idea to its deeper objective of ensuring “decent work” for all in order to ensure sustainable development.⁷⁵ As it writes, “[t]he four pillars of the Decent Work Agenda—social dialogue, social protection, rights at work and employment—are indispensable building blocks of sustainable development and must be at the centre of policies for strong, sustainable and inclusive growth and development.”⁷⁶ Recognizing these needs, the ILO maps out a range of priorities that appear likely to align government and corporate action to serve these labor and community needs, including active labor market supports and retraining mandates,⁷⁷ “social protection policies” guaranteeing healthcare and a safety net to avoid economic precarity resulting from disruptions,⁷⁸ and vigorous industrial and macroeconomic policies that can buffer shocks and seed new industries.⁷⁹ Critically, and related to the real need for democratic dialogue to implement these policies, “social dialogue” between different interests and sectors is identified as central to the legitimacy and efficacy of these transitions.⁸⁰

This fundamental understanding underlies the many framings of a “just transition”—that “decent work” should be constantly redefined by democratic processes and guaranteed by process of law and corporate

⁷⁴ See Sammy Roth, *How to Stop a Climate Law? Threaten a ‘No Social Distancing’ Protest*, L.A. TIMES (May 6, 2020), <https://www.latimes.com/environment/story/2020-05-06/socialgas-union-leader-protest-threat-no-social-distancing>.

⁷⁵ See ILO, GUIDELINES FOR A JUST TRANSITION TOWARDS ENVIRONMENTALLY SUSTAINABLE ECONOMIES AND SOCIETIES FOR ALL (2015), https://www.ilo.org/wcmsp5/groups/public/—ed_emp/—emp_ent/documents/publication/wcms_432859.pdf.

⁷⁶ *Id.* at 4.

⁷⁷ *Id.* at 14, 17.

⁷⁸ *Id.* at 16.

⁷⁹ *Id.* at 10–13.

⁸⁰ *Id.* at 9–10.

action (as embedded in economic investments).⁸¹ The shared view seems to be that unless the “green” and “new deal” components of the policy agenda are coupled, progress will be normatively problematic and pragmatically fraught. Indeed, the Paris Agreement makes this connection, stating that it was designed “[t]aking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.”⁸² As Professor Consuelo Chacartegui puts it in a thoughtful piece on the need for workers’ (which is to say, ordinary people’s) centrality in this intersection of environmental and labor priorities, this is a call for a new “green social contract.”⁸³

But forming such a social contract is no easy task, and successful examples are limited. As I describe in the next section, the history of such just transition arrangements suggests that they can be effective but cautions that creating and sustaining durable transitions requires sustained government oversight, community organizing, and legal enforcement. Later in the paper, I will reflect on the thinness of structures supporting such efforts in the oil and gas context and offer some suggestions for remedies.

B. Examples and Lessons from Past Transitions

Understanding “just transitions” as being fundamentally similar to other struggles to restrain capital flight from communities helps to make clear why their success so regularly depends on the strength of labor organizing and governmental institutions. It also helps make clear why American “environmental law”—particularly the 1970s-era pollution statutes and their progeny—is a poor fit for such transitions. That law’s currency is primarily tons of pollution, and its goals ultimately improve the efficiency of industrial designs.⁸⁴ As Professors Jedediah Purdy and K-Sue Park both observed,⁸⁵ this body of law is a poor fit when it comes

⁸¹ See S.J. Rombouts & N. Zekić, *Decent and Sustainable Work for the Future? The ILO Future of Work Centenary Initiative, The UN 2030 Agenda for Sustainable Development, and the Evolution of the Meaning of Work*, 24 *UCLA J. INT’L L. & FOREIGN AFF.* 317, 351–54 (2020) (articulating legal and practical connections between “decent work” and the environmental agenda in the transition context).

⁸² Paris Agreement to the United Nations Framework Convention on Climate Change preamble, Dec. 12, 2015, T.I.A.S. No. 16-1104, U.N.T.S. 54113.

⁸³ See Consuelo Chacartegui, *Workers’ Participation and Green Governance*, 40 *COMPAR. LAB. L. & POL’Y J.* 89, 106 (2018).

⁸⁴ See, e.g., 42 U.S.C. § 7410 (detailing pollutant reduction planning provisions); 42 U.S.C. § 7411 (providing industrial standards for emissions sources).

⁸⁵ See Jedediah Purdy, *The Long Environmental Justice Movement*, 44 *ECOLOGY L. Q.* 809 (2018) (arguing that the passage of modern environmental statutes in a time of relative economic equality resulted in a broad failure to include distributive justice and economic planning in this

to addressing distributional inequities. Just as the Clean Air Act, for instance, has significant “blind spots” when it comes to evening the distribution of polluting activities,⁸⁶ so too does the larger body of law mostly ignore the distribution of economic power that lies behind these patterns of exposure. As a result, it does not offer regulators many direct tools to respond to society-wide industrial shifts, or to mitigate their effects.

The gaps between extant legal structures in America, similar structures in other countries, and the goals of just transition advocates become quite clear upon a review of the actual experience of the transition. Available literature documents a string of only partial successes, with the smoothest paths appearing—predictably—in nations and regions where the political structure allows the community to legally insist upon capital support from private interests and firms which might otherwise simply depart.

The paradigmatic case for success in most of the just transition literature is the Ruhr industrial region of Germany,⁸⁷ which, over decades of industrial change and governmental focus, moved from being a center of coal-mining and coal-fired power production to a diversified, low-pollution, industrial economy.⁸⁸ This success, which is still incomplete, took decades, as incumbent industries resisted change, locked up large land areas, and declined to diversify.⁸⁹ Efforts that succeeded involved sustained investment in diversification, ongoing strict environmental standards used to force change, support for bottom-up economic growth, government wage and benefit support for displaced workers, and funds for the larger region.⁹⁰ It was, in other words, a social project, doubtless enhanced by Germany’s robust tradition of labor strength, including requirements for worker participation on corporate boards.⁹¹ As labor scholar Béla Galgóczi writes in describing the success, “[a] cooperative industrial structure with active roles for the government, the

regime); K-Sue Park, *This Land is Not Our Land*, 87 UNIV. CHI. L. REV. 1977 (2020) (arguing that Purdy’s own essay fails to reckon with the racist, imperialist, nature of U.S law, and that environmental law is in need of fundamental reforms).

⁸⁶ See Ann E. Carlson, *The Clean Air Act’s Blind Spot: Microclimates and Hotspot Pollution*, 65 UCLA L. REV. 1036 (2018) (describing the Act’s failure to address neighborhood-level pollution, and hence unequal distribution of facilities across the landscape).

⁸⁷ A thorough description of that transition is set out in Béla Galgóczi, *The Long and Winding Road from Black to Green: Decades of Structural Change in the Ruhr Region*, 6 INT’L J. LAB. RSCH. 217 (2014). Galgóczi, a senior researcher for the European Trade Union Institute, focuses his writing and work on union power and labor organizing for the transition – demonstrating the importance of these forces in charting a path forward.

⁸⁸ See *id.*

⁸⁹ See *id.* at 224–26.

⁹⁰ See *id.* at 231–37.

⁹¹ *Id.* at 234–37.

municipalities, the employers and the trade unions is a prerequisite for a successful and just transformation.”⁹²

This focus on comprehensive structures that can mediate economic change through politics and law recurs in the just transition literature. The absence of this form of cooperation undergirded by legal requirements will generally lead to less successful results. It is telling that the United States, with its weak social safety net and falling union membership, offers fewer examples of success. The same limited examples recur frequently in the literature, suggesting that, while political actors in the U.S. have sometimes secured success, it is generally not of a scale and duration sufficient to fully buffer against harms. Scholars, for instance, point to the Trade Adjustment Assistance program, a limited (but important) federal program, that provides funds and retraining to displaced workers (albeit only about 2.2 million in forty years, which is likely less than half of eligible workers).⁹³ Other recurring examples include assistance offered to tobacco farmers as smoking declined, to military base communities,⁹⁴ to northwest forest workers as logging was limited in the 1990s, and to rail workers during passenger rail declines.⁹⁵ In each instance, grants and retraining aided transitions and avoided displacement to some degree—though none of these examples is generally offered as a complete success. More recently, the Obama Administration’s “POWER” initiative,⁹⁶ which channeled tens of millions of dollars into transitioning fossil communities, appears to have been an economic and policy success on its own terms.⁹⁷ However, its limited scale, funding, and duration left outside evaluators to conclude that it was “unlikely to be sufficient to address the losses incurred by deep decarbonisation in the US.”⁹⁸ Such programs nonetheless serve as potential models, as well as cautionary examples, of why sustained, large-scale funding and attention are so important.

⁹² *Id.* at 238.

⁹³ See, e.g., J. Mijin Cha, *Just Transition: Tools for Protecting Workers and Their Communities at Risk of Displacement Due to Climate Policy* in PUTTING CALIFORNIA ON THE HIGH ROAD: A JOBS AND CLIMATE ACTION PLAN FOR 2030, 151–53 (Carol Zabin ed., 2018).

⁹⁴ See *id.* at 153–55.

⁹⁵ See ELENA FOSHAY ET AL., MAKING THE TRANSITION: HELPING WORKERS AND COMMUNITIES RETOOL FOR THE CLEAN ENERGY ECONOMY (2009), http://www.nlg-laboremploy-comm.org/media/Events_Conv2010-GreenEconCornell_ILR_Making_the_T.pdf.

⁹⁶ For a positive recounting of that initiative, which also offers a careful assessment of its limits, see Revesz, *supra* note 28, at 1550–55.

⁹⁷ See generally MOLLY CHAMBERLIN ET AL. APPALACHIAN REGIONAL COMMISSION, SUCCESS FACTORS, CHALLENGES, AND EARLY IMPACTS OF THE POWER INITIATIVE: AN IMPLEMENTATION EVALUATION, (2019), <https://www.arc.gov/wp-content/uploads/2020/08/POWERFY2019Evaluation-FinalReport.pdf>.

⁹⁸ ANNABEL PINKER, JUST TRANSITIONS: A COMPARATIVE PERSPECTIVE 27 (2020).

In sum, as a recent comprehensive review of global initiatives, including U.S. initiatives, led by the Scottish Government concluded, the “US’ Just Transition programs have been largely reactive—responding to an existing decline in the underground coal industry—rather than creating a comprehensive vision for transitioning away from all types of fossil fuels.”⁹⁹ This pattern mirrors the limited U.S. transition programs for other industries. In most American contexts, there is no particular legal or political structure that strongly limits the flexibility of capital. Instead, the established norm is that businesses may close facilities or relocate more or less at will. This system, of course, has substantial advantages to the degree that it avoids the inefficiencies of a more heavily planned economy, but its pairing with the U.S.’s very limited social safety net makes for precarity and fraught transition politics. To put the point baldly, if the coal mine closing means you are out of your employer-provided healthcare, and if the local school loses funding, the abstract promise of a low-carbon future is likely to be a cold comfort.¹⁰⁰ Weak social welfare policies coupled with extreme capital flexibility leave the government few options to buffer against the political blowback that results. Doing so primarily with grant programs (and hence with general public dollars rather than constraining private capital) likely contributes to the spotty and erratic funding pattern described above, as public money is often in short supply and subject to multiple competing demands.

It is telling, in this regard, that more complete successes in the U.S. seem to have occurred where this pattern did *not* hold—that is, where an institutional actor was available to constrain capital behavior and was subject to political pressure that forced it to actually do so. Two frequently cited examples are the transition planning around two power plant closures: the nuclear Diablo Canyon facility in California¹⁰¹ and the coal-fired Mojave Generating Station in Arizona.¹⁰² In the Diablo Canyon case, the utility was planning to shutter the facility with limited support for workers and the community, a move which the California Public Utility Commission might have approved were it not for a major organizing effort that resulted in legislation directing the Commission to approve a more complete just transition plan.¹⁰³ Similarly, in the Mojave example, the same Commission directed the utility that owned the retiring

⁹⁹ *Id.* (emphasis omitted).

¹⁰⁰ For an argument that failing to reckon with these consequences results in political defeats for climate policy, see Matto Mildemberger & Leah C. Stokes, *The Trouble with Carbon Pricing*, BOST. REV. (Sept. 24, 2020), <http://bostonreview.net/science-nature-politics/matto-mildemberger-leah-c-stokes-trouble-carbon-pricing>.

¹⁰¹ See Cha et al., *supra* note 49, at 10,225–26.

¹⁰² See generally Ramo & Behles, *supra* note 12.

¹⁰³ See *id.*, at 518-19; see also CAL. PUB. UTIL. CODE § 712.7 (directing this outcome).

plant to sell credits it had accumulated in a federal pollution trading market and use them to benefit the transitioning workers and community. This action was once again aided by a considerable push from well-organized labor and environmental groups working in partnership.¹⁰⁴

Encouraging though these models are in their circumstances, they may ultimately be a bit disheartening, as both turn on the presence of a legally empowered decisionmaker that had sufficient authority to insist that the owner of the retiring resource dedicate funds to the affected workers and community. Though public utility commissions are by no means perfect actors (indeed, they are often subject to capture by regulated entities in the absence of sustained oversight and can be used, like any government body, for good or ill),¹⁰⁵ they have a real capacity to sustain these transitions.¹⁰⁶ This is no small benefit in the context of power plants, a major asset considering the centrality of power production to U.S. emissions.¹⁰⁷ But the reach of similar institutions, as I discuss in detail below, is limited for oil and gas. Commissions do encompass the gas distribution system, but there is no dedicated public mechanism for oil and gas fields or refineries.

This gap is particularly worrying because this same pattern recurs globally. Successful transitions from dominant local economic actors consistently require government support and coordination. Researchers have reached similar conclusions on the importance of planning and sustained support in locales and contexts as far-flung as the Japanese power sector,¹⁰⁸ the Australian energy market,¹⁰⁹ South African energy

¹⁰⁴ See Ramo & Behles, *supra* note 12, at 523–27 (describing this outcome and arguing it is a good model for other commissions).

¹⁰⁵ See STOKES, *supra* note 68, at 68–107 (describing the history of U.S. utility regulation, and the capture of many utility commissions by incumbent fossil interests).

¹⁰⁶ For a useful discussion of the considerable discretion government agencies may be able to exercise to consider at least some of these effects, see Revesz, *supra* note 28, at 1566–68.

¹⁰⁷ See generally Welton, *supra* note 12 (making an extended argument for the critical role of democratic debate in decarbonizing the sector).

¹⁰⁸ See Akihisa Kuriyama & Naoya Abe, *Decarbonisation of the Power Sector to Engender a ‘Just Transition’ in Japan: Quantifying Local Employment Impacts*, 137 RENEWABLE & SUSTAINABLE ENERGY REV. 110,610, at 10 (2021) (“‘Transition management’, which aims to influence, facilitate, stimulate, and organise processes of transition, is important to avoid being locked into an inadequate status or facing a backlash”).

¹⁰⁹ See Tracey Dodd et al., *Electricity Markets in Flux: The Importance of a Just Transition*, 33 ELECTRICITY J. 106,835 (2020) (emphasizing the importance of planning to help affected communities); see also Sally A. Weller, *Just Transition? Strategic Framing and the Challenges Facing Coal Dependent Communities*, 37 ENV’T & PLAN. C: POL. & SPACE 298 (2018) (observing that these processes can fail if communities are defined too broadly, diluting focus on vulnerable workers in Australian industrial community).

workers,¹¹⁰ Greek lignite coal mines,¹¹¹ and Wyoming's Powder River Basin coal country.¹¹² Perhaps unsurprisingly, this work consistently shows that transitions are more effective when paired with careful planning, social safety nets, and careful engagement.¹¹³ In other words, transitions need a legal and political setting.¹¹⁴ Put simply, “[e]nergy transitions are thoroughly social affairs.”¹¹⁵

A proliferating series of comparative reviews of the literature reach essentially parallel conclusions. For instance, Ireland's National Economic and Social Council, broadly surveying available examples, ultimately reached conclusions consistent with the ILO's principles, calling for social dialogues supported by legal and political institutions, inclusive place-based planning, considerable government investments, and extensive planning and preparation.¹¹⁶ Scotland's Just Transition Commission has reached essentially identical conclusions,¹¹⁷ as have the

¹¹⁰ See Bruce Baigrie & Jeff Rudin, *Defend and Transform the Public Sector to Ensure a Just Transition*, 104 TRANSFORMATION: CRITICAL PERSP. ON S. AFR. 67, 67 (2020) (“Despite its hegemony, the private, market-centred approach is failing to deliver sufficient emission reductions. Rather, it is through a public pathway that a transformation of the energy system for the needs of the climate and working people can be delivered.”)

¹¹¹ See Alexandros Nikas et al., *Sustainable and Socially Just Transition to a Post-Lignite Era in Greece: A Multi-Level Perspective*, 15 ENERGY SOURCES, PART B: ECON., PLAN., & POL'Y 513, 536 (2020) (“Our research highlights that local civil societies in the lignite regions should be facilitated to transform, in order to maintain social cohesion; this support will provisionally enable achieving a just transition, in consideration of requirements for procedural and distributional justice across different income groups, labor, and gender”).

¹¹² See J. Mijin Cha, *A Just Transition for Whom? Politics, Contestation, and Social Identity in the Disruption of Coal in the Powder River Basin*, 69 ENERGY RSCH. & SOC. SCI. 101657 (2020).

¹¹³ For a sense of how support for a just transition is substantial even in coal-dependent communities, and hence an indication of the progress social engagement could bring, see Jessica A. Crowe & Ruopu Li, *Is the Just Transition Socially Accepted? Energy History, Place, and Support for Coal and Solar in Illinois, Texas, and Vermont*, 59 ENERGY RSCH. & SOC. SCI. 101309 (2020) (finding broad support for the transition even in coal-dependent regions).

¹¹⁴ For a thoughtful argument on the critical role of political dialogue in developing a just transition, extending this point to global climate negotiations, see Kirsten E.H. Jenkins et al., *Politicising the Just Transition: Linking Global Climate Policy, Nationally Determined Contributions and Targeted Research Agendas*, 115 GEOFORUM 138 (2020).

¹¹⁵ See Clark A. Miller & Jennifer Richter, *Social Planning for Energy Transitions*, 1 CURRENT SUSTAINABLE RENEWABLE ENERGY REP. 77, 77 (2014) (Going on to make this argument in several different social contexts).

¹¹⁶ See Sinéad Mercier, *Four Case Studies on Just Transition: Lessons for Ireland*, 15 NAT'L ECON. & SOC. COUNCIL RSCH. SERIES 1, 5 (2020) (drawing on Australian, Scottish, and German examples and a broad survey of the literature).

¹¹⁷ See generally PINKER, *supra* note 98.

states of California¹¹⁸ and Colorado,¹¹⁹ as well as the European Union, which has recently established a “Just Transition Mechanism” to facilitate planning and investment across its member states.¹²⁰ Academic reviews concur with these fundamentals;¹²¹ Imperial College London’s list of key recommendations is worth quoting in full, as it usefully echoes and reinforces the discussion so far, with researchers finding the following steps critical to success:

- Early implementation of policies and strategies to enable a managed decline of industries, supported by a long-term vision to promote the growth of new industries;
- Close collaboration and social dialogue between central governments, local government authorities, businesses and labour unions, as well as local communities, to ensure procedural justice and buy-in from the major transition stakeholders. Several countries already require such agreements by law or via collective bargaining agreements;
- Targeted social protections such as wage guarantees, pension rights, healthcare benefits and in some cases cash transfers and early retirement packages to mitigate workers’ economic losses in the short-term;
- Government and business investment in infrastructure, skills and retraining for affected workers as well as establishment of alternative industries to prevent industrial decline over the medium term;
- Government and business investment in education and innovation, including in universities and technical schools, to

¹¹⁸ See generally CAROL ZABIN ET AL., PUTTING CALIFORNIA ON THE HIGH ROAD: A JOBS AND CLIMATE ACTION PLAN FOR 2030 (2020) (recommending a broad agenda of job retraining, community dialogue, and government support). Unfortunately, California’s effort is so far only a report and coordinated executive action by existing agencies. California has not established a formal just transition body.

¹¹⁹ See generally COLO. DEP’T OF LAB. & EMP., COLORADO JUST TRANSITION ACTION PLAN (2020) (concluding, among other recommendations, that it was necessary to “empower communities,” and to identify “institutions to facilitate needed investments”). Note however that the Colorado effort focuses on coal, which is phasing out in the state, and lacks a similar mechanism for oil and gas – a real gap, consistent with the issues identified throughout this paper.

¹²⁰ The European Union’s Just Transition Mechanism’s efforts are set out at *The Just Transition Mechanism: Making Sure No One is Left Behind*, EUR. COMM’N, https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en.

¹²¹ See, e.g., Gambhir et al., *supra* note 67; see also generally ANNA ZINECKER ET AL., INT’L INST. FOR SUSTAINABLE DEV., REAL PEOPLE, REAL CHANGE: STRATEGIES FOR JUST ENERGY TRANSITIONS, (2018) (calling for a broad government-led effort to support transition, with substantial democratic participation by communities and workers).

support new industries that contribute to long-term regional growth and prosperity.¹²²

None of these recommendations should be particularly surprising; in many regards, they are a hallmark of good government in an economic crisis, regardless of its source. But, as I next discuss, it should be immediately striking that so few of these factors are present, even as the globally dominant oil and gas industry rapidly approaches a climate-driven precipice.

III. THE OIL AND GAS GAP AND HOW TO FILL IT

With an understanding of what just transition fundamentals are generally agreed to include, we can now turn to the looming crisis in oil and gas communities. That there is such a crisis should be evident; oil and gas production simply cannot continue for more than a few decades at most, and must start tapering far sooner to avoid climate disaster.¹²³ Already, refineries have begun to close¹²⁴ as the primary consumer of oil—the transportation sector—has seen company after company commit to electrification.¹²⁵ Gas’s use as a home-heating fuel is also coming to an end as communities across the country move to all-electric buildings.¹²⁶ And though there is a real (and concerning) possibility of some continued use of fossil fuels for plastic production,¹²⁷ and fossil fuels remain

¹²² Gambhir et al., *supra* note 67, at 13.

¹²³ See, e.g., Fiona Harvey, *What is the Carbon Bubble, and What Will Happen if it Bursts?*, GUARDIAN (June 4, 2018), <https://www.theguardian.com/environment/2018/jun/04/what-is-the-carbon-bubble-and-what-will-happen-if-it-bursts>.

¹²⁴ See Ted Goldberg, *Shutdown of Marathon’s Martinez Refinery Prompts Calls for ‘Just Transition’ for Oil Workers*, KQED (Aug. 3, 2020), <https://www.kqed.org/news/11831607/shutdown-of-marathons-martinez-refinery-prompts-calls-for-just-transition-for-oil-workers> (discussing how closure of California oil refinery is driving major economic shifts for workers and community).

¹²⁵ See, e.g., Reuters, *VW Brand Will Accelerate Electric Vehicle Shift*, AUTO. NEWS EUR. (Mar. 5, 2021), <https://europe.autonews.com/automakers/vw-brand-will-accelerate-electric-vehicle-shift> (reporting that VW, world’s largest automaker, plans for EVs to account for 70% of vehicle sales in Europe by 2030); Reuters, *General Motors Announces Plan for All-Electric Lineup by 2035*, GUARDIAN (Jan. 28, 2021), <https://www.theguardian.com/environment/2021/jan/28/gm-electric-vehicles-cars-gas-diesel>.

¹²⁶ See generally TED LAMM & ETHAN N. ELKIND, BUILDING TOWARDS DECARBONIZATION: POLICY SOLUTIONS TO ACCELERATE BUILDING ELECTRIFICATION IN HIGH-PRIORITY COMMUNITIES (2021), <https://law.ucla.edu/sites/default/files/PDFs/Publications/Emmett%20Institute/Building-toward-Decarbonization-January-2021.pdf>.

¹²⁷ See, e.g., Renee Cho, *More Plastic is On the Way: What It Means for Climate Change*, STATE OF THE PLANET (Feb. 20, 2020), <https://news.climate.columbia.edu/2020/02/20/plastic-production-climate-change>.

important to the chemical industry,¹²⁸ such use seems very unlikely to replace the loss of the dominant demand sectors in transportation and home appliances. We will see a future of closed refineries and shut-in oil and gas wells—a future which, though it may be accelerated by policy, is also increasingly buoyed by technological progress and market demand as the costs of electrification drop.¹²⁹ But, the pace of this transition, and whether it leaves communities and workers behind, will substantially depend on whether we have properly considered all the people it affects. And there, the law leaves much to be desired.

In the sections that follow, I will first briefly draw the contrast between oil and gas law—which lacks clear mechanisms for community transition—and power sector law—which, though still deficient, at least provides some meaningful transition structures. I discuss the approximate scale of worker and community support that this gap may leave unaddressed, with attendant human and political costs. I then suggest multiple legal mechanisms, some but not all of which may require legislative action, that can begin to fill this critical gap.

A. Neglected Legal Supports for Oil and Gas Decommissioning

The contrast between the power sector and the oil and gas sector is fairly stark. Generally speaking, limited but real public protections are available to communities affected by power sector fuel production and power plant closures. Oil and gas communities benefit from far fewer governance tools, and the tools that exist are heavily focused upon safely decommissioning specific facilities rather than protecting the public as a whole during the energy transition. Though neither set of tools is adequate, oil and gas communities face heavy odds against a just transition, as their legal tools are particularly limited. Protections for power *production* communities are notably better than those for fuel mining communities.

¹²⁸ Though, perhaps, not forever. See Robert F. Service, *Can the World Make the Chemicals It Needs Without Oil?*, SCI. (Sept. 9, 2019), <https://www.sciencemag.org/news/2019/09/can-world-make-chemicals-it-needs-without-oil>.

¹²⁹ The continuing work of Dr. Amory Lovins of the Rocky Mountain Institute, a long-time pioneer in this area, continues to be useful to chronicle this change. For an indicative overview of these falling costs, along with a discussion of how they are likely to drive change even in seemingly hard to decarbonize industrial sectors, his recent papers are useful. See, e.g., Amory Lovins, *Decarbonizing Our Toughest Sectors – Profitably*, MIT SLOAN MANAGEMENT REVIEW (Aug. 4, 2021), https://sloanreview.mit.edu/article/decarbonizing-our-toughest-sectors-profitably/?utm_source=rmi&utm_medium=referral&utm_campaign=decarb (describing past progress and suggesting new applications).

Power production communities benefit from the utility commission regulatory framework.¹³⁰ Utility commissions can generally require investor-owned utilities to provide adequate service, to plan their power production and plant closure decisions, and to provide at least some consideration of community needs during plant closures—as was done, for instance, in the Diablo Canyon and Mojave cases discussed above.¹³¹ The commissions can also generate some funds for these efforts through their authority over power sector rates and utility spending decisions. However, commissions are certainly not perfect, and their authorities are not explicitly calibrated to address just transition concerns. They are rate regulators at their core, and their choices have often contributed to continued fossil reliance.¹³² But in their ability to direct capital planning around fossil fuels, commissions at least provide a direct democratic forum to debate future spending and to focus the questions around the public good.¹³³

There are generally not analogous institutions for oil and gas, or, indeed, for coal mining communities.¹³⁴ This is likely because power production has long been regulated as a monopoly under utility commission review in order to provide a public good. In contrast, fuel extraction has focused on maximizing resource extraction with some environmental protections. But because we did not anticipate the end of the fossil fuel era at its start, we never established legal mechanisms intended to wind it down, or to do so fairly with regard to communities and workers.

In sum, the state of the system from start to finish is as follows. For oil and gas *extraction*, federal and state law generally focuses on decommissioning safety and removing contamination from well sites but does not include economic supports for communities dependent on

¹³⁰ See Ramo & Behles, *supra* note 12.

¹³¹ See *supra* notes 101 through 104 and accompanying text.

¹³² See STOKES, *supra* note 68 at 68–107 (describing the history of U.S. utility regulation, and the capture of many utility commissions by incumbent fossil interests).

¹³³ See *id.* at 242–46 (arguing that compensating civil society intervenors in utility commission proceedings can effectively shift decisions towards the public interest).

¹³⁴ Coal mines sites are addressed through the Surface Mining Control and Reclamation Act (SMCRA), See 30 U.S.C. §§ 1201 *et seq.*, which directs that open-pit mine sites be restored to their original contour post-mining, which, along with various Clean Water Act protections, affords at least a modicum of protection. Though these requirements are often observed more in the breach, and lack any serious provisions for making communities and workers economically whole after closure, they do offer some degree of site reclamation. (For a critique of SMCRA and suggestions for reforms, see LANCE N. LARSON, CONG. RSCH. SERV., R46610, RECLAMATION OF COAL MINING OPERATIONS: SELECT ISSUES AND LEGISLATION (2020). In this regard, coal mining communities are relatively close to oil and gas communities – which similarly benefit from some site closure requirements, and similarly suffer from no real requirements for long-term community economic support, as I will discuss below.

production. Thus, while the Bureau of Land Management¹³⁵ and the Bureau of Ocean Energy Management¹³⁶ do have programs in place to clean up well pads and drilling rigs, as do most state agencies, and can require private capital spending to do so, their regulations simply do not extend to requiring (for instance) support payments to affected workers or communities. Moreover, though bonding is required, there is good evidence that current bonding requirements are inadequate to fund full cleanup liabilities, much less support a just transition.¹³⁷ Likewise, with regard to oil and gas *transport*, although the Federal Energy Regulatory Commission (FERC) regulates natural gas pipeline removals to protect against undue rate increases for consumers,¹³⁸ and the Pipeline Health & Safety Materials Administration has rules for oil pipeline shutdowns to prevent leaks,¹³⁹ neither institution's ambit extends to community and worker support. Indeed, the U.S. Supreme Court has made clear that FERC lacks authority to focus on questions of general social welfare.¹⁴⁰

There is one bright spot with regard to intrastate natural gas transmission and distribution: Public utility commissions have room to at least regulate decommissioning of this system, albeit with their typical focus primarily on rates and service design rather than community transitions as a whole.¹⁴¹ Nonetheless, the contrast between this part of the system and other unregulated aspects is sharp—this is the one area where community groups can directly make a case to a regulator for economic support for a just transition, and such groups are actively engaged on economically decommissioning the system.

¹³⁵ For a description of the Bureau of Land Management's reclamation activities, *see Reclamation*, BUREAU OF LAND MANAGEMENT, <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/reclamation>. Interestingly, the BLM may have discretion (and potentially a mandate) to do considerably more – including potentially requiring net zero standards for federal minerals. Should it do so, the need for community and workforce planning will accelerate. *See* Jamie Gibbs Pleune et al., *A Road Map to Net-Zero Emissions for Fossil Fuel Development on Public Lands*, 50 ENV'T. L. REP. 10734 (2020).

¹³⁶ *See, e.g.*, 30 C.F.R. § 250.1703 (offshore oil and gas decommissioning requirements).

¹³⁷ *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFF., GAO-19-615, OIL AND GAS: BUREAU OF LAND MANAGEMENT SHOULD ADDRESS RISKS FROM INSUFFICIENT BONDS TO RECLAIM WELLS (2019) (documenting major shortfalls in bond revenues relative to reclamation needs), <https://www.gao.gov/assets/gao-19-615.pdf>.

¹³⁸ *See* 15 U.S.C. § 717f(b) (discussing decommissioning requirements in statute).

¹³⁹ *See* 49 C.F.R. § 192.727 (providing the pipeline abandonment requirements).

¹⁴⁰ *See* NAACP v. Fed. Power Comm'n, 425 U.S. 662 (1976) (holding that the jurisdiction of FERC's predecessor agency does not extend to general social policies outside of energy regulation).

¹⁴¹ *See, e.g.*, SHERRI BILLIMORIA & MIKE HENCHEN, ROCKY MOUNTAIN INSTITUTE, REGULATORY SOLUTIONS FOR BUILDING DECARBONIZATION (2020) (discussing authorities available to building decarbonization), <https://rmi.org/insight/regulatory-solutions-for-building-decarbonization>.

With regard to refineries, I can find no U.S. law or body directly regulating the economic aspects of decommissioning at all. Though environmental laws apply, these statutes do not have a meaningful economic component focused on community and worker support. This failure begins even with managing the real estate involved. Federal cleanup laws, such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA),¹⁴² will not be sufficient to generate major funds for comprehensive site cleanups of the enormous acreages which refineries and oil and gas wells now occupy and lack planning structures for site reuse.¹⁴³ And there are no equivalents to utility commissions focused on translating rate payments to communities. Instead, communities will be left high and dry if sites close without legal mechanisms that can capture revenues from the fossil companies or the government and provide governance mechanisms with which to steer them.

With this in mind, note how few of the just transition tools discussed above pertain to the oil and gas context. There are no legal structures providing for sustained social dialogue around decommissioning or dedicated support for oil and gas workers or communities. The literature concurs; in California's several-hundred page report on potential transition options for oil and gas communities, for instance, there are no formal legal structure noted that could manage oil and gas transition needs beyond recommendations on retraining and further government financial support.¹⁴⁴ Instead, communities are left to their own devices as these facilities shut down and trigger social disruptions—unless legal structures can be modified to provide sustained resource support and a political forum in which to design a transition effort.

¹⁴² Note that general environmental statutes, including CERCLA and RCRA apply to some spills and waste from all facilities while exempting many oil and gas products from full regulation, and these statutes do not generally require comprehensive cleanup of facilities or community or worker support. So, though these sorts of statutes may somewhat blunt the economic harm faced by communities by providing at least some requirements to clean sites, and some funds to do so, they are not, on their own, sufficient as a just transition solution. They focus on tons of pollution, not jobs or tax base question and, as noted, provide broad exemptions for many oil and gas activities.

¹⁴³ For a flavor of the scale of the looming disaster of unusable fossil sites, Philadelphia's harrowing experience in its efforts to clean up a refinery site, marked by decades of contamination, and held back by governance and funding failures, are indicative. See Laila Kearney & Valerie Volcovici, *150 Years of Spills: Philadelphia Refinery Cleanup Highlights Toxic Legacy of Fossil Fuels*, REUTERS (Feb. 16, 2021), <https://www.reuters.com/article/us-usa-energy-refinery-cleanup-insight-idUKKBN2AG12O>.

¹⁴⁴ See ZABIN ET AL., *supra* note 118.

B. Scale of the Transition

The coming disruption is large, but manageable with sufficient support. Oil and gas infrastructure necessarily follows certain geographies, tracking the locations of established deposits. Refineries are often situated either near production sites where pipelines are available or near deep-water ports where oil imports and exports are critical.¹⁴⁵ This means that, though the overall scale of the industry is large and its economic choices have broad macroeconomic consequences, the specific communities requiring the most support are limited. This should be encouraging, as it suggests that a limited set of community support measures in particular areas can meaningfully address transition needs. The particular geography of the industry and the pace and structure of its decline should inform our thinking.

According to the Bureau of Labor Statistics, about 102,600 people worked in oil refining or related fields in spring 2021,¹⁴⁶ and another 135,200 worked in oil and gas extraction.¹⁴⁷ However, these estimates are incomplete. For instance, other workers maintain transmission and distribution equipment, and many more workers are involved in work in some way dependent on the overall system, including gas station workers, car mechanics, and so on. But the core work force is relatively small. It is also concentrated. A substantial proportion of U.S. oil production takes place in just six states—California, Texas, Alaska, New Mexico, Oklahoma, and North Dakota¹⁴⁸—with gas production and processing adding an additional handful of states, including Louisiana, Pennsylvania, and Oklahoma.¹⁴⁹ Refining geographies are also limited. Although facilities are scattered across the country, only four states have refining capacity of more than 1 million barrels per day: California, Texas, Louisiana, and Illinois.¹⁵⁰ The workforce is similarly limited and

¹⁴⁵ See Carola Hein, “Old Refineries Rarely Die”: *Port City Refineries as Key Nodes in the Global Petroleumscape*, 55 *CAN. J. HIST.* 450 (2018) (discussing these geographies and their persistence globally).

¹⁴⁶ *Industries at a Glance: Petroleum and Coal Products Manufacturing: NAICS 324*, U.S. BUREAU LAB. STAT. (Mar. 2021), <https://www.bls.gov/iag/tgs/iag324.htm>. The BLS notes refining is the dominant job in this category, though it also includes industries like asphalt manufacturing. This rolled up number is thus a bit of an overestimate.

¹⁴⁷ *Industries at a Glance: Oil and Gas Extraction: NAICS 211*, U.S. BUREAU OF LAB. STAT. (Mar. 2021), <https://www.bls.gov/iag/tgs/iag211.htm>.

¹⁴⁸ The U.S. Energy Information Administration maintains this information. See *Petroleum & Other Liquids*, U.S. ENERGY INFO. ADMIN. (June 30, 2021), https://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbbl_m.htm.

¹⁴⁹ See Pollin & Callaci, *supra* note 11, at 118–19.

¹⁵⁰ The Energy Information Administration maintains this information, see U.S. ENERGY INFO. ADMIN., *ANNUAL REFINERY REPORT*, tbl. 1, <https://www.eia.gov/petroleum/refinerycapacity/table1.pdf>.

concentrated. As of 2016, when the industry was larger than it is today, it made up less than 5% of the workforce in any state, and generally much less—in California, the figure was around 0.2%.¹⁵¹ Because these figures are concentrated in particular communities within the states, the geographic reach of disruption is smaller than one might initially assume,¹⁵² although disruption can be acute in specific fossil fuel-dependent communities.

It may, therefore, be more useful to think about the just transition at the national level as broken down into a set of specific community choices in particular geographies affecting particular workers. Just as a move away from coal power affects specific mining communities in Appalachia and Wyoming more than many others, a move away from oil affects specific geographies. For instance, in California, which I will be using repeatedly as an example throughout the remainder of this paper, the reality of the fossil fuel transition will be felt most acutely in refinery communities like Richmond, Torrance, Wilmington, Martinez, and Bakersfield, and in communities near the vast oil fields of the southern San Joaquin Valley.¹⁵³

Moreover, within these communities, the transition will initially focus only on oil and gas industry workers who, as it turns out, may be in a comparatively good position to weather such change. These workers are older, whiter, richer, and far more male than the communities in which they live,¹⁵⁴ due to long-standing inequities in the industry workforce and the comparatively high salaries paid by the industry.¹⁵⁵ A careful analysis by economists Robert Pollin and Brian Callaci is worth quoting in full on this point:

¹⁵¹ See Pollin & Callaci, *supra* note 11, at 118–19.

¹⁵² See *id.* The oil industry's own estimates of its workforce align with these figures. For instance, a recent report on oil and gas in California, commissioned by an industry trade association, identifies about 12,000 people working in refining, 13,000 working in “midstream” industries like transmission, and about 18,000 in extraction. See SHANNON M. SEDGWICK ET AL., OIL AND GAS IN CALIFORNIA: THE INDUSTRY, ITS ECONOMIC CONTRIBUTION, AND USER INDUSTRIES AT RISK IN 2017, 23 tbl. 3-12 (July 2019). If the industry ultimately employs about 230,000 people nationally, and California is a major oil and gas state, one would expect about 50,000 workers in the state. Note that, unsurprisingly, the industry estimates far more people working in far downstream applications like gas stations — a further 90,000 workers approximately. See *id.*

¹⁵³ For a sense of the narrow set of California refinery communities, see *California's Oil Refineries*, CALI. ENERGY COMM'N, <https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries> (last visited Mar. 11, 2021) (describing the footprint of the industry in California).

¹⁵⁴ If they live there at all. Wealthy workers may well often live relatively far from the pollution sources which they operate, meaning a focus on workers may yield quite different results than a focus on communities.

¹⁵⁵ See Pollin & Callaci, *supra* note 11, at 95.

In considering the broader social context for a Just Transition program, we need to also recognize the major gender and ethnic disparities that will occur both as the fossil fuel industry contracts and the Just Transition program advances. The basic point is straightforward: U.S. fossil fuel industry employment is, at present, dominated by white males. Thus, as of 2015, women account for only 5.2 percent of overall employment in the coal industry, 18.3 percent in oil and gas extraction, and 13.2 percent in all mining support activities. African Americans accounted for only 1.5 percent of employment in coal, 3.5 percent in oil and gas, and 6.1 percent in support activities. This means that white men will be disproportionately hurt as the fossil fuel industry contracts but should also disproportionately benefit through a Just Transition program. It is also true that a disproportionate share of jobs in the clean energy industries will be created within the traditionally male-dominated manufacturing and construction industries.¹⁵⁶

Thus, the “just transition” question for oil and gas has an unusual valence in that direct supports to workers, if constructed purely as wage support, would flow generally to comparatively wealthy white men. However in fossil-dependent communities, industry workers represent significant sources of spending and investment,¹⁵⁷ and their employers are substantial contributors to the tax base, meaning that cutting off an income flow to the community affects many people beyond those who may be laid off.¹⁵⁸ As Professor Julia Haggerty and her colleagues write in the coal community context, the question will often be how to shift from economic dependence on a narrow set of fossil industries to a broader and more durable economic base with an eye to the community as a whole, not just workers directly employed in the industry.¹⁵⁹ Such shifts, of course, come with substantial dividends—for instance, the removal of the very substantial public health costs that fossil extraction and processing imposes on communities as a result of high levels of

¹⁵⁶ *Id.* Industry analysis accords with these figures. The California oil and gas report discussed above, see SEDGWICK ET AL., *supra* note 152, at 26, describe an industry that is more than 75% male and more than 50% white, even in diverse California.

¹⁵⁷ See, e.g., SEDGWICK ET AL., *supra* note 152, at 35–38 (estimating direct labor payments and tax payments).

¹⁵⁸ For a careful demonstration of these community concerns, in the coal context, see ADELE MORRIS, BROOKINGS INST., BUILD A BETTER FUTURE FOR COAL WORKERS AND THEIR COMMUNITIES (2016).

¹⁵⁹ See Julia H. Haggerty et al., *Planning for the Local Impacts of Coal Facility Closure: Emerging Strategies in the U.S. West*, 47 RES. POL’Y 69 (2018) (surveying cultural and economic dependence on fossil facilities and suggesting a range of planning-based strategies to manage community repair).

pollution.¹⁶⁰ We might, therefore, conceive of the task as managing a near-term economic transition for a small subset of economically valuable workers who service facilities that may contribute substantially to the tax base even as those facilities also impose substantial external costs on the larger community via pollution and suppressed economic diversification.

How much would such a managed transition cost? We do have some useful estimates. Pollin and Callaci, for instance, helpfully break down the total costs into categories, including wage and pension support for laid-off workers, site remediation costs, and community tax base replacement.¹⁶¹ Their estimated transition cost is based on estimated rates of worker attrition, meaning that additional layoffs drive transition costs, and the attrition rates are scaled to the pace of industry shutdown, which boils down to about 2,700 job losses nationally annually.¹⁶² Looking at coal, oil, and gas on the national level, Pollin and Callaci estimate an annual cost of about \$600 million in 2016 dollars if the transition takes about twenty years, an amount which comprises about two-thirds worker support and one-third community transition spending.¹⁶³ Pollin and colleagues have since refined this analysis to look specifically at oil and gas at the state level in Pennsylvania, coming up with an estimate of about \$210 million annually in 2021 dollars for worker and community supports for the shutdown of the oil and gas industry in the state, encompassing about 64,000 workers.¹⁶⁴ This estimate arising from Pennsylvania perhaps suggests that the earlier estimate for national costs is a little low.

As this paper was moving towards press, a team led by Professor Pollin re-performed a parallel analysis for California. The estimates are of the same general range of costs in prior analyses, suggesting that addressing gradual job losses through pension support and similar mechanisms for 112,000 oil and gas sector workers would cost between \$470800 million annually in 2021 dollars.¹⁶⁵ As they observe, this sum is a tiny percentage

¹⁶⁰ See, e.g., KARRAS, *supra* note 18 at 20–26 (discussing co-pollutant burdens); see also Baker, *supra* note 14 (describing compellingly the intolerable conditions in fossil fuel dominated communities).

¹⁶¹ See Pollin & Callaci, *supra* note 11, at 124–25.

¹⁶² See *id.* at 108.

¹⁶³ See *id.* at 123–25.

¹⁶⁴ See ROBERT POLLIN ET AL., IMPACTS OF THE REIMAGINE APPALACHIA & CLEAN ENERGY TRANSITION PROGRAMS FOR PENNSYLVANIA: JOB CREATION, ECONOMIC RECOVERY, AND LONG-TERM SUSTAINABILITY 5–6 (2021), <https://peri.umass.edu/publication/item/1394-impacts-of-the-reimagine-appalachia-clean-energy-transition-programs-for-pennsylvania>.

¹⁶⁵ ROBERT POLLIN ET AL., A PROGRAM FOR ECONOMIC RECOVERY AND CLEAN ENERGY TRANSITION IN CALIFORNIA 9, 110–14 (2021), <https://peri.umass.edu/publication/item/1466-a-program-for-economic-recovery-and-clean-energy-transition-in-california>.

of California's GDP,¹⁶⁶ and is substantially offset by the potential for hundreds of thousands of new jobs in cleaner sectors.¹⁶⁷ These estimates, too, are broadly consistent with the earlier national estimate—though somewhat higher. But they are not an order of magnitude different. It simply remains the case that the ultimate costs of transition are low, and especially low relative to the benefits. It is striking that the report was commissioned by an oil workers' union—which is clearly seeing the writing on the wall and mobilizing for the transition ahead.¹⁶⁸

Ultimately, we don't need perfect precision to get a sense of the support needed. If these estimates are even an order-of-magnitude close to reality, then the costs are not very large. And it is hard to see how the estimates could be *very* wrong, as they essentially reflect transfer payments to workers and communities based on high-quality national data on total employment, and there are not additional hundreds of thousands of oil and gas workers hiding somewhere. On the existing labor base, spending would necessarily be much, much smaller than funds that could be made available. National discretionary spending in the 2020 budget year, prior to the massive Biden economic stimulus, was on the order of 1.6 *trillion* dollars.¹⁶⁹ Compared to that, a \$600 million annual spending account to support several hundred thousand transitioning workers and their communities out of millions of workers nationally is not a large expense. This spending stays comparatively small at the state level—for example, Pollin estimates that it is equal to about 0.01% of Pennsylvania's GDP.¹⁷⁰ Critically, this figure is also small relative to the net income of major fossil companies, as there is no particular reason to suppose support for fossil transitions must come from the public fisc. For instance, Exxon's 2019 global profits were nearly \$15 billion,¹⁷¹ and Chevron's were around \$ 2.9 billion.¹⁷² Relatively modest repurposing of public or private funds is likely to be sufficient to provide a substantially more just transition for fossil communities than could occur without such support.

¹⁶⁶ *Id.* at 9.

¹⁶⁷ *See id.* at 9–10.

¹⁶⁸ *See* Sammy Roth, *Newsletter: Why a California Oil Workers' Union Is Getting Behind Clean Energy*, L.A. TIMES (June 10, 2021), <https://www.latimes.com/environment/newsletter/2021-06-10/why-a-california-oil-workers-union-is-getting-behind-clean-energy-boiling-point>.

¹⁶⁹ *See, e.g.*, CONG. BUDGET OFF., THE BUDGET AND ECONOMIC OUTLOOK: 2021 TO 2031, 2 tbl. 1-1 (2021), <https://www.cbo.gov/system/files/2021-02/56970-Outlook.pdf>.

¹⁷⁰ *See* POLLIN ET AL., *supra* note 164, at 6.

¹⁷¹ EXXONMOBIL, 2019 SUMMARY ANNUAL REPORT 45 (2019), <https://corporate.exxonmobil.com/-/media/Global/Files/investor-relations/annual-meeting-materials/annual-report-summaries/2019-Summary-Annual-Report.pdf>.

¹⁷² CHEVRON, 2019 ANNUAL REPORT, at xv (2019), <https://www.chevron.com/-/media/chevron/annual-report/2019/documents/2019-Annual-Report.pdf>.

To be clear, this is more than a modestly sized financial challenge. Each community is different, and each will present a different mix of structural challenges. For instance, in some communities, the loss of fossil fuel jobs will be accompanied by corresponding growth in clean energy jobs and industry, especially as the geography of the new economy sometimes overlaps with the existing fossil fuel geography.¹⁷³ As Brookings Institution scholars have documented, wind and solar energy potential is high in many high-fossil fuel employment counties¹⁷⁴ and concentrations of skilled labor in these regions may provide opportunities to transition. But we cannot simply gesture at these potential jobs. Not all opportunities will be union and high-paying jobs, and not all fossil fuel workers will find their way into these different fields, even if the jobs are co-located with prior fossil sites. Each transition will be different and neither employees nor communities are fungible; there is no guarantee that workers will simply transition to different energy jobs. Each community will face its own governance challenges and be obliged to design a path towards a more diversified economy with whatever resources and government support it can muster.¹⁷⁵

How can these revenues be captured? Generally, transition experts recommend establishing trusts or bonds sufficient to finance economic support for communities along with governance structures to direct revenue expenditure.¹⁷⁶

For instance, the scholars at the Center for Sustainable Economy have argued for several years for “Fossil Fuel Risk Bonds.”¹⁷⁷ The conceptual underpinnings of this proposal are useful in revealing funding requirements. In that work, rather like Professor Pollin’s work on just

¹⁷³ See, e.g., ADIE TOMER ET AL., BROOKINGS INST., HOW RENEWABLE ENERGY JOBS CAN UPLIFT FOSSIL FUEL COMMUNITIES AND REMAKE CLIMATE POLITICS (2021), <https://www.brookings.edu/research/how-renewable-energy-jobs-can-uplift-fossil-fuel-communities-and-remake-climate-politics> (providing a careful mapping of renewable energy potential overlaid upon the existing fossil economy and showing significant areas of overlap).

¹⁷⁴ See *id.*

¹⁷⁵ For potential planning strategies, see Haggerty et al., *supra* note 159.

¹⁷⁶ See, e.g., HEADWATERS ECONOMICS, REPLACING COAL REVENUE AND INVESTING IN ECONOMIC TRANSITION: SOLUTIONS FOR COAL-DEPENDENT COMMUNITIES (2019) (assembling a range of potential financial mechanisms, including revenue capture from fossil facilities, government support, and transition payments); Haggerty et al., *supra* note 159 (arguing for designing community transition plans, including financing); ERNEST J. MONIZ & MICHAEL J. KEARNEY, THE ROOSEVELT PROJECT: A NEW DEAL FOR EMPLOYMENT, ENERGY, & ENVIRONMENT (. 2020) (arguing for wholesale economic and labor planning for the transition).

¹⁷⁷ JOHN TALBERTH & DAPHNE WYSHAM, FOSSIL-FUEL RISK BONDS: SAFEGUARDING PUBLIC FINANCES FROM PRODUCT LIFE CYCLE RISKS OF OIL, GAS, AND COAL (2016), <https://sustainable-economy.org/wp-content/uploads/2016/06/Fossil-Fuel-Risk-Bonds-May-25.pdf>.

transition financial needs, discussed above,¹⁷⁸ Drs. John Talberth and Daphne Wysham point out that the “externalized costs associated with fossil fuels are being now or will be borne by public agencies at every level of government.”¹⁷⁹ Talberth and Wysham focus in their work on the many risks associated with production and use of fossil fuels, including pollution and public health risks, along with climate change adaptation and mitigation costs,¹⁸⁰ but, of course, such costs also include the transition costs discussed earlier in this paper. Talberth and Wysham note that neither current bonding nor insurance requirements for fossil fuel companies encompass these risks,¹⁸¹ an observation consistent with the inadequate fossil fuel bonding in California discussed above. These costs could be packaged into the financial mechanisms they propose.

Talberth and Wysham suggest two such mechanisms: bonds and trust funds.¹⁸² Firstly, bonds could be required of fossil fuel companies. These are *not* the typical bonds required of drillers, which focus only on remediation of a specific site. Instead, as they explain:

[R]isk bonding for fossil fuels would consist of conventional financial assurance instruments that address discrete risks caused by particular entities in particular places—such as abandoned infrastructure, explosions, or localized pollution. Fossil fuel risk bond programs can expand the scale (i.e. required coverage amounts) and scope (i.e. types of hazards covered) of these conventional instruments.¹⁸³

This concept could be expanded to include estimated transition costs via mechanisms under California law discussed below. Their second suggested mechanism is trust funds, which could accumulate funds to “deal with pervasive risks multiple entities contribute to—such as earthquake swarms, groundwater pollution, climate disasters, and adverse impacts on public health” and, I would add, community transition support.¹⁸⁴ Such trusts, they note, could be based on surcharges on fossil production and their rates “[could] be adjusted as new or more accurate cost projections are made available” for associated public risks; “[m]oney deposited into [Climate Risk Trust Funds] can be managed by a third

¹⁷⁸ See Pollin & Callaci, *supra* note 11.

¹⁷⁹ TALBERTH & WYSHAM, *supra* note 178, at 1.

¹⁸⁰ See *id.* at 2–5.

¹⁸¹ See *id.* at 6–8.

¹⁸² Note that calculating the proper funds to sequester in either mechanism is a task that itself requires study and funding. Many communities may not even know the full scope of their financial risk to start and filling this information gap could be a focus for early interventions and funding.

¹⁸³ TALBERTH & WYSHAM, *supra* note 178, at 8.

¹⁸⁴ See *id.*

party, a quasi-public trustee with fiduciary responsibility to invest these funds wisely,” or directly by government.¹⁸⁵

Neither of these proposals are fundamentally radical in structure or concept. Indeed, bonds and trusts of this sort fit well into risk management practices familiar to industry and could reasonably become part of the cost of doing business. Such instruments would have the additional benefit of making the cost of the transition visible to corporate financial planners, and hence ultimately to investors, thereby encouraging proper budgeting for transition costs.¹⁸⁶ These mechanisms could and should be further modified to focus not just on fossil risk—which is at the core of the Talbert and Wysham proposals—but also on community and worker risk. Such “Just Transition Bonds” or “Just Transition Trusts” would accumulate funds to offset the full scope of community risk associated with the transition, including worker payment, pension supports, and funds for community services and economic redevelopment.

Visibility of this sort may decrease incentives to indefinitely hedge against policy changes and use existing assets by running out the use of old fossil fuel resources and may also increase activity to plan for the clean energy transition.¹⁸⁷ Other academic economists and planners have pointed to the advantage of steady financial flows sustained over an extended duration for transitioning communities as well, of the sort that both trusts and bonds provide.¹⁸⁸ Community planning specialists at Headwaters Economics, a firm focused on local governance and transition support, for instance, emphasize the importance of sustained, steady, and predictable funding in order to make a durable “fiscal transition” from dependence on fossil industry.¹⁸⁹

This need for sustained support recurs throughout the literature and throughout American economic dislocations, both past and present. Indeed, Professors Gallagher and Glasmeier demonstrate in a recent

¹⁸⁵ See *id.* at 10–12.

¹⁸⁶ See, e.g., Jonatan Pinkse & Federica Gasbarro, *Managing Physical Impacts of Climate Change: An Attentional Perspective on Corporate Adaptation*, 58 BUS. & SOC'Y 333 (2019) (arguing for the critical importance of policy that translates climate risk into forms visible to corporate actors).

¹⁸⁷ For a discussion of this hedging behavior, and the need for change, see Jessica F. Green et al., *Transition, Hedge, or Resist? Understanding Political and Economic Behavior toward Decarbonization in the Oil and Gas Industry* (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3694447.

¹⁸⁸ See, e.g., DANIEL GALLAGHER & AMY GLASMEIER, JUST INSTITUTIONS FOR DEEP DECARBONIZATION? ESSENTIAL LESSONS FROM 20TH CENTURY REGIONAL ECONOMIC AND INDUSTRIAL TRANSITIONS IN THE US (MIT Ctr. for Energy and Env't Pol'y Rsch., Roosevelt Project Working Paper, 2020), <http://ceepr.mit.edu/files/papers/The-Roosevelt-Project-WP-6.pdf>.

¹⁸⁹ See HEADWATERS ECONOMICS, *supra* note 177 at 2–6.

working paper that the efficacy of U.S. transition and economic development bodies ranging from New Deal and Great Society efforts, like the Tennessee Valley Authority and Appalachian Regional Commission to more recent efforts like the Trade Adjustment Assistance program discussed above, turn substantially on their degree of sustained, consistent, financial support.¹⁹⁰ As they write:

It is clear from past experiences that adjustment to large-scale economic change takes significant time. Major regional development initiatives of the original New Deal, including the TVA, took decades to yield outcomes for local people. Similarly, the ARC's effort to assist impoverished communities in Appalachia took decades to deliver meaningful change across the region. Deep decarbonization implies ambitious investments to transform energy, transport, agriculture and infrastructure networks. Financial resources must be committed to match the stated level of ambition required until a new state of equilibrium is reached. The investment in deep decarbonization will require multiple trillions of dollars. The cost of inaction is, of course, far greater. Congress should legislate to ensure that sufficient funding is appropriated and channeled over the coming decade to sustain the ambitious process of decarbonization until decarbonization is fully realized.¹⁹¹

Drawing from these analyses, we can conclude, in sum, that (1) the total cost of worker and community support for a transition away from oil and gas dependency is large relative to the budget of a local community but comparatively small relative to state or federal budgets and to fossil company revenues, and (2) developing funding mechanisms, including Just Transition Bonds and Just Transition Trusts, that can durably provide funds for a well-governed fiscal transition is critical. Without sustained funding, governance and transition projects are likely to over-promise and under-deliver, generating political resistance to the transition and slowing necessary pollution reductions.

Of course, once captured, funds must be well-governed. Communities that have long been dominated by fossil fuel industries may experience real cultural, political, and social challenges even if they are able to secure transition funds.¹⁹² Professor Julia Haggerty and her colleagues, for instance, have demonstrated that the “community psychology” of areas long dominated by fossil fuel industries may struggle with the change, which presents challenges for residents and workers as they are asked to

¹⁹⁰ See GALLAGHER & GLASMEIER, *supra* note 188, at 34–37.

¹⁹¹ *Id.* at 40.

¹⁹² See, e.g., Haggerty et al., *supra* note 159, at 74–75.

conceptualize a very different economy and pattern of life.¹⁹³ Based on studies in coal country that likely apply to oil and gas communities as well, “[a]n obvious paradox defines the situation facing coal-dependent communities: to be resilient, according to the literature, resource-dependent communities must accept and embrace change. However, according to the literature, to be resource-dependent is to be predisposed toward support of industry” which can slow change or limit governance opportunities.¹⁹⁴ Nonetheless, “early acceptance of a post-coal future allows more time and resources to employ proactive planning efforts.”¹⁹⁵ Resistance by some community members, however, should not be overstated—pollution from fossil communities can often also engender profound, grassroots desire for change, expressed in environmental justice movements around the country.¹⁹⁶

A clear funding path that reduces resistance is a recurring feature of recent statutes focused on the transition. For instance, New Mexico recently allowed a coal-fired power utility to securitize its debts to speed retirement, and the utility, at state direction, coupled this financial planning with community-led transition efforts.¹⁹⁷ Washington State¹⁹⁸ and Colorado¹⁹⁹ have taken similar approaches, with a focus on community planning coupled with managed economic transition. Senator Tammy Duckworth has introduced comparable legislation federally, offering a wide array of transition funding and planning assistance to help coal country, though it has not yet passed.²⁰⁰

So, with these models in mind, our question is how to design legal structures that *both* capture financial resources for communities and enable community-led planning to sustainably transition. The next section takes up this inquiry.

C. Potential Tools and Principles for Transitioning Communities: A California Case Study

What might these tools look like? We know from the general literature of transitions discussed above that successful transitions are community-led, that they require sustained financial support, that they necessarily

¹⁹³ See *id.* at 74.

¹⁹⁴ See *id.* at 78.

¹⁹⁵ See *id.* at 78.

¹⁹⁶ See, e.g., Baker, *supra* note 14 (arguing clearly and compellingly that residents of fossil “sacrifice zones” are politically ready for change).

¹⁹⁷ See S.B. 489, 2019 Leg., Reg. Sess. (N.M. 2019).

¹⁹⁸ See Act of May 7, 2019, 2019 Wash. Sess. Laws 1608.

¹⁹⁹ See An Act Concerning the Continuation of the Public Utilities Commission, 2019 Colo. Sess. Laws 3290.

²⁰⁰ See The Marshall Plan for Coal Country Act of 2020, S.4306, 116th Cong. (2020).

involve support for workers and for the larger local economy, and that they take many years. We have already canvassed general examples—from the Trade Adjustment Act to the Ruhr transition—that adopted portions of these principles with greater or lesser success. But how might these tools apply in practice in the oil and gas context? To answer that question, I turn now to a specific context in which the transition is accelerating: California, which remains both a major oil-producing and refining state and a leader in the move away from fossil fuels.

The discussion that follows is specific to California law, but the principles animating it are not. As I have established above, oil and gas jurisdictions lack just transition legal structures across the country. No state has established a full suite of statutory tools to enable the transition, and background oil and gas law and environmental law focus on regulating emissions from the industry, not transitioning communities away from it. Further, in the absence of an equivalent to public utility commissions and their ability to direct financial planning via democratic processes for this sector, communities will have a common need to design and establish novel financial instruments to enable the transition. They will face this need, in California and elsewhere, against a background of state laws, which often limit the government's ability to raise taxes and fees, and unstable federal spending decisions. These limits and uncertainties will imperil the transition without additional financial tools. So, while I have focused on California law, I expect these examples and tactics to apply more generally.

1. Financial Tools: Trusts, Initiative Funding, and Carbon Finance

California oil and gas communities (like many others) will find themselves in a substantial financial double bind. On the one hand, bonding requirements for oil and gas wells are too low even to clean up industrial sites, much less support workers and communities. In addition, there are no such bonding requirements for refineries at all. On the other hand, state law prevents communities from raising general taxes and fees without supermajority votes. If this double bind persists, the transition would require sustained state-level or federal-level support. Though such support is certainly important, it is far from certain. However, there remain limited but important possibilities for revenue-raising measures that can be passed by simple majority vote.

First, the financial structures in place on the industry are limited. Oil and gas *extraction* in California is substantially regulated but does not include transition financing requirements. Unlike some oil- and gas-

producing states,²⁰¹ such as Alaska, California does not have a severance tax or public trust fund to capture oil and gas revenues despite decades of recommendations to that effect.²⁰² Indeed, 2013²⁰³ and 2019²⁰⁴ legislation to create such a structure failed.²⁰⁵ As a result, there is no substantial reservoir of fossil fuel revenues ready to support a transition.

Individual well permits and processes are not substitutes for the lack of a statewide transition trust. For instance, the core oil and gas permitting processes carried out by the California Department of Conservation are not designed for transition purposes: California well bonding requirements have only applied since 1939, missing many early wells entirely, and were only expanded to cover the approximate cost of well plugging and cleanup in 2018.²⁰⁶ These post-2018 bonding requirements are currently capped at \$25,000 to \$40,000 per well, depending on depth,²⁰⁷ meaning that bonds cannot possibly (and are not legally allowed to) cover salary replacement for an individual worker for a single year, much less a general economic transition.²⁰⁸ Indeed, bonds likely do not cover even the economic burden associated with well closure costs because of the large population of un-bonded wells. For example, one recent report suggests that California faces liabilities of between \$500 million and \$9.1 billion for well cleanups, far exceeding existing recoverable bonds.²⁰⁹ Additionally, there are no bond requirements at all

²⁰¹ See, e.g., TED BOETTNER ET AL., W. VA. CTR. ON BUDGET AND POL'Y, CREATING AN ECONOMIC DIVERSIFICATION TRUST FUND: TURNING NONRENEWABLE RESOURCES INTO SUSTAINABLE WEALTH FOR WEST VIRGINIA (2012), <https://wvpolicy.org/wp-content/uploads/2018/5/WVEconomicDiversificationTrustFundRpt021312.pdf> (canvassing six states with successful oil and gas trusts, and recommending a similar approach for West Virginia).

²⁰² See, e.g., FRANK CAMM & CHRISTOPHER W. MYERS, RAND CORP., A CALIFORNIA OIL SEVERANCE TAX: WHO GAINS? WHO PAYS? (1982), <https://www.rand.org/pubs/reports/R2975.html> (recommending such a tax); Rich Nemeec, *California (Again) Considering Oil, Gas Severance Tax*, NGI (Feb. 14, 2019), <https://www.naturalgasintel.com/california-again-considering-oil-gas-severance-tax> (discussing most recent failed attempt to impose such a tax).

²⁰³ See S.B. 241, 2013 Leg. (Cal. 2013).

²⁰⁴ See S.B. 246, 2019 Leg. (Cal. 2019).

²⁰⁵ See Hannah Wiley & Bryan Anderson, *Guns, Gas and Soda – Most California Tax Proposals Died at the Capitol, but a Few Remain*, SACRAMENTO BEE (May 19, 2019), <https://www.sacbee.com/news/politics-government/capitol-alert/article230504724.html>.

²⁰⁶ See CAL. PUB. RES. CODE §§ 3204 (requiring bonds of between \$25,000 to \$40,000, depending on well depth); CAL. PUB. RES. CODE §3205 (providing blanket indemnity bonds for groups of wells).

²⁰⁷ See CAL. PUB. RES. CODE § 3204.

²⁰⁸ California oil and gas regulators can require end-of-life bonds covering additional costs from operators “have a history” of rule violations. See 14 CAL. CODE REGS. § 1722.8, but these bonds are similarly meant to cover well management costs, rather than transition assistance.

²⁰⁹ See JUDSON BOOMHOWER ET AL., CAL. COUNCIL ON SCI. AND TECH., ORPHAN WELLS IN CALIFORNIA: AN INITIAL ASSESSMENT OF THE STATE’S POTENTIAL LIABILITIES TO PLUG AND

for refineries, despite their large potential cleanup costs. Thus, bonding under current authorities will, at most, lessen very large liabilities already passed from fossil companies to the government, but will not provide a source of transition financing.

Environmental permitting is also not a substitute. California air permits for construction and operation, for instance, are intended to ensure compliance with environmental laws,²¹⁰ not to provide an economic planning tool. Indeed, permit fees “shall not exceed, for any fiscal year, the actual cost of [administering] district programs”, plus inflation.²¹¹ Pollution permit programs are not the answer here.

Both federal and state constitutional provisions further constrain local governments. Federally, limitations on the ability of governments to secure exactions as a condition of permit issuance are substantial, as such exactions must bear a reasonable nexus to the permitted activity.²¹² It seems at least open to question whether packaging a general transition requirement into an otherwise more specific air, water, or mineral permit would meet this test given the narrower scope of these permits relative to a community’s general fiscal needs for the transition. This limit, combined with the practical realities that permitting for refineries and oil and gas wells is intermittent, and that most sources already exist, suggests a need for more general fiscal provisions outside of the exactions context if financial support is to be extracted.

However, state law limits local and state governments in California from easily raising general taxes and fees. A series of voter-approved propositions—Propositions 13, 218, and 26, the last of which passed in 2010²¹³—led to substantial limitations that require a supermajority two-thirds vote for statutes imposing taxes while narrowing the class of fee-like instruments that fall outside of this requirement.²¹⁴ Notably, the

DECOMMISSION ORPHAN OIL AND GAS WELLS (2018), <https://ccst.us/wp-content/uploads/CCST-Orphan-Wells-in-California-An-Initial-Assessment.pdf>.

²¹⁰ See CAL. HEALTH & SAFETY CODE § 42301.

²¹¹ See CAL. HEALTH & SAFETY CODE § 42311.

²¹² See generally *Nollan v. Cal. Coastal Comm’n*, 483 U.S. 825 (1987); *Dolan v. City of Tigard*, 512 U.S. 374 (1994) (jointly establishing this general requirement); see also Christina M. Martin, *Nollan and Dolan and Koontz—Oh My! The Exactions Trilogy Requires Developers to Cover the Full Social Costs of their Projects, But No More*, 51 WILLAMETTE L. REV. 39 (2014) (discussing and defending these requirements).

²¹³ These propositions are collectively codified in Articles XIII A–XIII D of the California Constitution. For a detailed history of this series of propositions, and their purpose, see *Schmeer v. County of Los Angeles*, 213 Cal. App. 4th 1310, 1317–26 (Ct. App. 2013); see also *Sinclair Paint Co. v. State Bd. of Equalization*, 937 P.2d 1350 (1997) (recognizing a broad scope for government regulatory fees under Proposition 13, which Proposition 26 later constrained).

²¹⁴ See CAL. CONST., art. XIII A, § 3 (requiring a two-thirds vote for “any change in state statute which results in any taxpayer paying a higher tax”); CAL. CONST., art. XIII C, § 2 (requiring a

state's Cap-and-Trade Program has been held not to be a fee or a tax under these requirements and hence outside of two-thirds vote requirements,²¹⁵ though the program was recently explicitly extended to 2030 by such a vote.²¹⁶ The result is that, with the possible exception of redirecting the limited Cap-and-Trade revenues, the path forward for raising revenue sufficient to fund a just transition is limited in many California jurisdictions.

Contrast these limitations with financial recommendations offered by scholars of the transition and by leading world governments, discussed above. Not only is there no California equivalent of the European Union's Just Transition Mechanism²¹⁷ or the Ruhr Valley transition program,²¹⁸ there are not even state equivalents of the U.S.'s prior, and more limited, transition efforts. Indeed, California's primary just transition report, required during the Cap-and-Trade extension legislative process in 2017,²¹⁹ recognized planning and transition needs consistent with global best practices but did not identify any state financial support mechanisms that could fund them.²²⁰

Nonetheless, there are real alternatives. I see three options worth exploring further that could secure additional funding. Each of these possibilities likely can be implemented by majority vote. Moreover, each option is politically viable, as they align community and worker interests in economic stability with environmental interests in a transition away from fossil fuels. Each can also be improved by designing community governance options to help manage funds, which I discuss separately in the next section below. The models below, though specific to California law, could also likely be implemented in other U.S. jurisdictions with similar legal structures.

a. Revenue Sequesters by Statute to Create Just Transition Trusts or Bonds.

Although most tax measures imposed by state or local governments require a two-thirds vote, California courts have established that a

majority vote by the public for local government general tax increases and a two-thirds vote for special tax increases).

²¹⁵ See *Cal. Chamber Com. v. State Air Res. Bd.*, 10 Cal. App. 5th 604 (Ct. App. 2017) (holding that the program is a regulatory pollution control measure, not a tax or fee subject to Article XIII A).

²¹⁶ See A.B. 398, 2017 Leg., Reg. Sess. (Cal. 2017).

²¹⁷ See *The Just Transition Mechanism* *supra* note 120 and associated text.

²¹⁸ See Galgóczi, *supra* note 87 and associated text.

²¹⁹ See CAL. HEALTH & SAFETY CODE § 38591.3 (calling for a just transition report to be developed by the state Workforce Development Board in coordination with the State Air Resources Board and outside experts).

²²⁰ See Cha, *supra* note 93, at 166–67 (recognizing needs and suggesting further work).

measure is not a tax if money does not move into the public treasury—even if funds sequestered in this way are directed to be spent for public purposes.²²¹ Thus, fossil fuel companies can be required to sequester funds in their private accounts by ordinary majority vote statutes, and could likely be ordered to do so to provide funds for just transition purposes as determined by statute and executed by a trustee or bond holder.

This authority is rooted in a case called *Schmeer v. County of Los Angeles*,²²² which was litigated under the California Constitution as modified by the most recent set of anti-tax propositions. The case concerned a Los Angeles County ordinance that banned plastic bags for most uses, required retail stores to charge for paper carryout bags, and critically, required retail stores to retain the funds from these charges and to use such funds “only for (1) the costs of compliance with the ordinance; (2) the actual costs of providing recyclable paper bags; or (3) the costs of educational materials or other costs of promoting the use of reusable bags, if any.”²²³ A plastic bag company sued to challenge the ordinance on the theory that it was a tax requiring two-thirds approval.²²⁴

After lower court proceedings, the California appellate court handling the case ultimately held that the ordinance was *not* such a tax. The court explained that “[t]he term ‘tax’ in ordinary usage refers to a compulsory payment made to the government or remitted to the government,”²²⁵ and that this ordinary meaning applied with regard to the California Constitution.²²⁶ The bag ordinance did impose a charge, and retailers were “required to use the funds for specified purposes,” but “[t]he charge [was] not remitted to the county.”²²⁷ “Because the charge [was] not remitted to the county and raise[d] no revenue for the county,” it was, therefore, not a tax.²²⁸

This is a sensible holding. After all, most forms of government regulation impose some cost, which is passed on to customers to a degree, and those regulations describe how a business is to behave under this constraint. For example, a power company may be required to capture smokestack emissions and raise power rates accordingly under the direction of a utility commission. But these regulations are not taxes. The

²²¹ *Schmeer v. County of Los Angeles*, 213 Cal. App. 4th 1310, 1326–30 (Ct. App. 2013).

²²² *See id.*

²²³ *Id.* at 1314.

²²⁴ *Id.* at 1315.

²²⁵ *Id.* at 1326–27.

²²⁶ *Id.* at 1329.

²²⁷ *Id.* at 1329.

²²⁸ *Id.* *See also* *Howard Jarvis Taxpayers’ Ass’n v. Bay Area Toll Authority*, 51 Cal. App. 5th 435, 452 (Ct. App. 2020) (citing *Schmeer*’s holding as established law).

bag ordinance in *Schmeer* may have required more direct economic behavior (the bag charges), but it was not ultimately much different from a waste management ordinance in function, and it did not become a tax merely because it specified a price-based mechanism.

Nonetheless, the *Schmeer* holding that companies can be directed how to sequester and spend revenue without triggering taxation limits has considerable long-term importance, as it clarifies that merely regulating economic behavior does not implicate supermajority vote requirements. With that point established, there appears to be no constitutional impediment to jurisdictions requiring fossil fuel companies to set aside some additional percentage of revenues or profits for public purposes, so long as these revenues do not flow into the public purse. For instance, a jurisdiction appears to be able to require the equivalent of a bag fee for refinery products—a refinery just transition charge, for instance—which could be held in the company’s account and used for specified public purposes.²²⁹ Such purposes could include providing a guaranteed source of funds to maintain salaries for laid off workers to the degree that pensions did not cover those costs, site clean-up and remediation costs, or costs of donations to local social service organizations. So long as retained funds do not enter public accounts directly, funds could be directed toward a wide array of public purposes required for facility closure and worker support. As I note in the governance section below, community advisory bodies could likely be formed to advise on spending decisions to improve overall governance.

Moreover, companies could be directed to place these funds in trust or to bond against them for appropriate security. Many companies would likely hire trustees to administer these accounts, just as companies have done in the wake of environmental compliance cases like the Volkswagen²³⁰ and Aliso Canyon matters.²³¹ Though trust accounts may be more familiar as an outcome of environmental law violations, there is no formal reason why they cannot be established *prior* to harm in order to avoid it. Such Just Transition Trusts or Just Transition Bonds would

²²⁹ To be sure, companies would have to be prevented from sequestering funds via shell companies or other entities to hide revenues, so proper drafting, including corporate disclosure would be important. California already imposes corporate disclosure requirements on large fossil companies, via its Cap-and-Trade Program, and disclosure principles from that regulation, and other best practices, could be adapted for this purpose. See 17 CAL. CODEREGS. § 95833 (2021) (discussing Cap-and-Trade corporate disclosure requirements).

²³⁰ See VOLKSWAGEN DIESEL EMISSIONS ENV’T MITIGATION TR. (2021), <https://www.vwenvironmentalmitigationtrust.com/>.

²³¹ See Brian Melley, *L.A. Judge Approves \$120M Settlement for Massive Aliso Canyon Gas Leak*, KQED (Feb. 25, 2019), <https://www.kqed.org/news/11728851/1-a-judge-approves-120m-settlement-from-massive-aliso-canyon-gas-leak>.

establish a durable source of funds which could be expended in parallel to public monies to ease the transition.

These accounts could be established either by local or state action. State action may be preferable in order to avoid the difficulty of navigating local politics repeatedly in each relevant jurisdiction. On the other hand, local ordinances may be better tailored to local needs. Either way, such revenue sequestering ordinances appear to be achievable by majority vote and would, in principle, be able to garner support both from environmental and labor interests.

b. Initiatives to Establish Just Transition Taxes, Trusts, or Bond Accounts

Of course, not every local (or state) government may be willing to impose additional costs on fossil fuel companies. Happily, initiatives are available as an alternative, and popular initiatives may impose similar mechanisms by majority vote, with the important advantage that popular-vote initiatives may direct funds into public accounts.

This principle was established by a recent California appellate case concerning a voter-initiated proposition, Proposition C, in San Francisco, which imposed additional taxes on businesses to fund social services.²³² The City and County of San Francisco sought a judgment that the proposition properly passed by majority vote, and that the California constitutional two-thirds vote requirement for special taxes imposed by local governments did not apply if the tax was imposed by voters rather than the government.²³³ The court carefully considered the matter, emphasizing that the California Constitution enshrines the initiative power as a core government mechanism and that a “defining characteristic of the initiative is the people’s power to adopt laws by majority vote.”²³⁴ It determined that the anti-tax propositions had not removed this characteristic of the initiative, meaning that majority-vote initiatives originated by the people can raise taxes.²³⁵

The implications are straightforward. A local initiative can raise taxes on select businesses—including fossil companies—and direct the use of these taxes to pay for social services. Such initiatives could thus fill a critical gap in the trust/bond measures described above by enabling *government* coffers to fund community needs which could otherwise be affected by fossil fuel closures diminishing the tax base. While a trust or

²³² See *City & County of San Francisco v. All Persons Interested in the Matter of Proposition C*, 51 Cal. App. 5th 703 (Ct. App. 2020).

²³³ See *id.* at 439.

²³⁴ See *id.* at 440.

²³⁵ See *id.* at 450-51 (indicating that no limitations are imposed by Propositions 13, 26, and 18).

bond account administered by private parties could not directly channel funds to public accounts supporting the schools, an initiative could do so. Thus, though initiatives could also impose revenue sequesters of the sort described above, their best use may be in supplementing local taxes to create sources of funds that are under public democratic control.

c. Use of Carbon Market Revenues

California is unique among the states in having an economy-wide cap-and-trade program. Because the program is, alas, unique, I pass it over lightly here as a source of generally applicable models. Nonetheless, the program generates substantial revenues, and though it has been determined not to be a fee or tax subject to the California Constitution, and it has been re-approved by a two-thirds vote.²³⁶ Thus, its revenues can, in principle, be flexibly used for multiple purposes. In practice, however, revenues are substantially restricted by statute and generally must be spent in furtherance of defined pollution control purposes, in accordance with spending plans developed by the state Department of Finance and Air Resources Board and consistent with legislative appropriations.²³⁷ However, certain just transition expenditures—especially for community changes consistent with climate goals²³⁸—have been approved from these funds, and statutes could be changed to further focus on economic support needs. One could reasonably anticipate a further focus on community economic transformation as the transition continues, especially in light of the legislature’s focus on this need in the Cap-and-Trade reauthorization statute²³⁹ and Governor Newsom’s recognition of the need in a recent Executive Order.²⁴⁰ As other states begin to establish carbon pricing mechanisms, as seems likely in the next decade, they may provide additional support for just transitions.

²³⁶ See *Cal. Chamber Com. v. State Air Res. Bd.*, 10 Cal. App. 5th 604 (Ct. App. 2017); A.B. 398, 2017 Leg., Reg. Sess. (Cal. 2017); see also Ruairi Arrieta-Kenna, *California Just Got Bipartisan Support to Extend its Cap-and-Trade Program to 2030*, VOX (July 18, 2017), <https://www.vox.com/energy-and-environment/2017/7/15/15955756/california-climate-brown-ab398-cap-and-trade>.

²³⁷ See generally CAL. GOV’T. CODE §§ 1628.8–16428.9 (describing funds and spending programs).

²³⁸ More information on one of these programs, the “Transformative Climate Communities” program, is available at: *Transformative Climate Communities: Community-led for a Sustainable California*, CAL. STRATEGIC GROWTH COUNCIL (2021), <https://sgc.ca.gov/programs/tcc/>.

²³⁹ See CAL. HEALTH & SAFETY CODE § 38591.3.

²⁴⁰ Cal. Exec. Order No.-79-20 §§ 7–8 (Sept. 23, 2020) (calling for development of a just transition roadmap) and §8 (directing agencies to expedite regulatory processes to support a just transition).

d. Conclusions on Financing Mechanisms

California, like many states, has restrictive anti-tax measures in its Constitution. However, California also has substantial legal opportunities to nonetheless develop the financial resources needed to ease communities through the transition away from fossil fuels. I have identified three important tools: Just Transition Trusts or Bonds requiring sequesters of private funds to support the effort, Just Transition Initiative Measures that can establish focused taxes to support community services, and carbon market revenues that can smooth funding and provide grants from state monies. These mechanisms, though certainly not exclusive, can provide important funding to address community and worker needs. Moreover, because these mechanisms achieve both environmental and economic goals, they can potentially achieve broad support—especially in light of the increasingly apparent need for transition planning.

Further, these mechanisms are worth pursuing as legal and organizing goals. Federal support may come along as well, but local funds under local control are important assets. In fact, securing such funds has been a focus of recent municipal and state litigation against oil companies on various climate tort and consumer protection theories, which is moving slowly (and thus far largely unsuccessfully) through the courts.²⁴¹ Although I have no quarrel with these suits on their merits, state and local governments might benefit by looking to their own authorities to constrain fossil company revenues to support the just transition rather than relying only on judicial intervention. States have real authorities to use, and employing these traditional public welfare powers legislatively may well be a faster route to transition funding than reliance on the courts.

2. Governance Tools: Decommissioning Timelines in General Plans and Local Transition Committees

Financing tools will work properly only if paired with governance mechanisms. As discussed above, specialized governance mechanisms are absent from the core of the oil and gas industry's interface with communities since the activities most likely to be critical to community workforces and tax bases do not have clear oversight bodies. Though it is true that aspects of natural gas and oil transmission, distribution, siting, and rate design are regulated, there is no equivalent of a public utility commission's decommissioning process for oil and gas fields or refineries, even though both industries are substantial players in

²⁴¹ See, e.g., Dino Grandoni, *States and Cities Scramble to Sue Oil Companies Over Climate Change*, WASH. POST (Sept. 14, 2020), <https://www.washingtonpost.com/climate-environment/2020/09/14/states-cities-scramble-sue-oil-companies-over-climate-change>.

community economic and political life. But this does not mean that there are not institutions that are plausibly in a position to regulate. These regulations are instead under the purview of town and county councils, which are the general land use regulators and service providers at the local scale. The question is how to focus attention on the transition, whether through these general bodies or through specialized adjuncts.

I would propose three potential mechanisms which might help, again using California law as an example. My assumption is that it will generally be best to pair these mechanisms with financial support mechanisms of the sort described above. An advisory body without financial wherewithal is unlikely to be effective, and a financial mechanism not firmly embedded in government planning will not bear fruit. Combining these mechanisms during statute or initiative drafting is the most likely path to passage and efficacy.

a. Just Transition Within General Plans

California recently required local planners to include an “environmental justice element” in general plans when those plans are revised.²⁴² This planning exercise has the potential to begin conversations around just transitions and could also serve as a model for later just transition planning elements that are explicitly designed to map out a route away from fossil fuels in a particular jurisdiction.

Specifically, communities implementing the environmental justice plan element are to identify “disadvantaged communities within the area covered by the general plan” and set out policies that:

- (A) Identify objectives and policies to reduce the unique or compounded health risks in disadvantaged communities by means that include, but are not limited to, the reduction of pollution exposure, including the improvement of air quality, and the promotion of public facilities, food access, safe and sanitary homes, and physical activity.
- (B) Identify objectives and policies to promote civic engagement in the public decision-making process.
- (C) Identify objectives and policies that prioritize improvements and programs that address the needs of disadvantaged communities.²⁴³

²⁴² See S.B. 1000, 2016 Leg. (Cal. 2016) (noting requirement); see also CAL. GOVERNOR’S OFF. OF PLAN. & RESCH., GENERAL PLAN GUIDELINES: CHAPTER 4, SECTION 4.8, ENVIRONMENTAL JUSTICE ELEMENT (2020), https://opr.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf (describing the history of this requirement and suggesting mechanisms to implement it).

²⁴³ CAL. GOV’T. CODE § 65302(h)(1)(A)–(C).

Note that these requirements include both substantive goals focused on pollution reduction and procedural safeguards intended to ensure that communities can chart their own futures. This sort of design element can be used directly, especially in concert with other general plan elements focusing on economic planning and development, to address structured planning to reduce exposure to fossil industry pollution.

This general plan approach can also be expanded, by statute or at the discretion of local governments, to include other general plan goals, including explicit planning for a just transition. Such focused, community-led planning will help to build community consensus on options and methods to move away from fossil fuels. This is a critical step, as early and transparent planning is critical to overall transition efficacy.²⁴⁴

b. Decommissioning Planning Councils

Outside of the local general planning process, new planning bodies could be set up explicitly to focus on transitioning. Local or state laws could be written to require decommissioning of major fossil resources by a certain date, or at least to direct explicit community planning around decommissioning goals and needs. Bodies charged with these tasks could be composed of a range of community, government, civil society, and business representatives and could be charged with tasks such as providing advisory guidance to county and city councils, producing binding timelines for decommissioning, or directing the spending of transition monies developed through the financial mechanisms discussed in the preceding section.

There is interesting precedent for such bodies in a recent California environmental planning statute, 2017's AB 617,²⁴⁵ which passed in tandem with the reauthorization of the Cap-and-Trade Program. As Professor Alice Kaswan discusses, the statute was intended to provide a thorough environmental justice approach for reducing neighborhood-level air pollution and includes a range of mechanisms, including community-level emissions reduction programs.²⁴⁶ To be sure, the statute is a preliminary effort and is still subject to significant criticism for being insufficiently stringent or directive. Nevertheless, it remains an evolving model for change. The California Air Resources Board has since provided that such plans are to be constructed in the first instance by

²⁴⁴ See, e.g., Haggerty et al., *supra* note 159.

²⁴⁵ A.B. 617, 2017 Leg. Reg. Sess. (Cal. 2017).

²⁴⁶ See Alice Kaswan, *A Broader Vision for Climate Policy: Lessons from California*, 9 SAN DIEGO J. CLIMATE & ENERGY L. 83, 117–20 (2018); see also CAL. HEALTH & SAFETY CODE § 44391.2 (setting out community planning requirements).

“community steering committees” composed of a diverse array of voices.²⁴⁷ These steering committees, by their nature, disrupt traditional networks of political control and legal formation in a given jurisdiction by giving communities a dominant voice in their own futures while also directing local governments to collaborate with communities on plans designed to measurably decrease air pollution through a wide range of strategies.²⁴⁸ This approach was a marked change to prior environmental policy. As Brookings Institution scholars explain:

AB 617 responds directly to two enduring frustrations. First, local air pollution problems were not being adequately addressed. Second, despite the emphasis that [California’s core global warming statute] AB 32 placed on community engagement and procedural justice, local community groups continued to feel that their input was not being valued or integrated into policy design or implementation. AB 617 provides unprecedented levels of support for public engagement in the development of comprehensive, community-level emission reduction plans.²⁴⁹

As those scholars note, this change in governance mattered because it “brought representatives from multiple governmental agencies into the same room. Despite having overlapping jurisdiction, some of these agencies had not interacted with the community, or each other, on local air pollution issues.”²⁵⁰ This forced interaction “reduces frustration and transaction costs for community groups and residents” while aligning government agencies with a range of authorities around a common goal. Whether this effort will succeed remains an open question, and communities across the state have made important criticisms and suggestions for reform. Nonetheless, the model is well worth investigating and pursuing as a pioneering effort to address direct community needs in a state-mandated remediation framework.

The same challenges—fragmented authorities, unclear overall vision, and communities with substantial unmet needs—are present in the just transition context, suggesting that a parallel approach might make both political and practical sense. It would be worth considering statewide mandates directing communities to develop community steering committees focused on the just transition, including the task of

²⁴⁷ CALIFORNIA AIR RESOURCES BOARD, COMMUNITY AIR PROTECTION BLUEPRINT 6–7, 22–23 (2018), https://ww2.arb.ca.gov/sites/default/files/2020-03/final_community_air_protection_blueprint_october_2018_acc.pdf (setting out community steering committee approach).

²⁴⁸ See CAL. HEALTH & SAFETY CODE § 44391.2(c) (providing the planning requirements).

²⁴⁹ MEREDITH FOWLIE ET AL., BROOKINGS INST., CLIMATE POLICY, ENVIRONMENTAL JUSTICE, AND LOCAL AIR POLLUTION 12 (2020), <https://www.brookings.edu/wp-content/uploads/2020/10/ES-10.14.20-Fowlie-Walker-Wooley.pdf>.

²⁵⁰ *Id.* at 16.

decommissioning existing fossil fuel resources and identifying new economic strategies. Such just transition plans could then be incorporated into local planning documents or, if the committees were so empowered, directly used to alter current land use patterns, including by setting decommissioning deadlines for redundant facilities. Committees empowered to allocate funds or to recommend fund allocations from the pools generated by the financial mechanisms that I have recommended above would, doubtless, find this a more palatable task.

This sort of mechanism could function either as a planning exercise or as a law-making exercise that includes direct transition and decommissioning mandates. In practice, given the novelty of the problem, it is likely that we will see planning-level authorization first, followed by more firm authorities should the plans prove to be politically acceptable and practically implementable.

Should firmer authority be granted, committees might, of course, face objections that mandates to close certain facilities run afoul of existing permit, lease, or land use rights, or require compensation as takings. Since these objections will necessarily be highly fact specific, I will simply flag them here and note that eminent domain is one potential tool for climate policy, should vested rights ultimately be a barrier.²⁵¹ I will admit, however, that there is reason to be skeptical that aging fossil fuel assets are ultimately entitled to substantial, if any, takings compensation.²⁵² Such compensation for regulatory changes ultimately turns on a balancing test which depends heavily on what reasonable “distinct investment-backed expectations” are being modified by a change in law as well as on the extent of the diminution.²⁵³ An expectation of indefinite profit from a declining resource like oil and gas may not be particularly reasonable, and initial investments in many cases have long since paid out. For instance, oil and gas refining assets in California are old, as are most oil and gas fields.²⁵⁴ The youngest refinery in the state went into service in 1982, and the majority date from the 1930s or before.²⁵⁵ These

²⁵¹ See Alexandra B. Klass, *Eminent Domain as Climate Policy*, 2020 WIS. L. REV. 49 (2020) (making an argument for eminent domain in clean energy facility siting which could be applied to the decommissioning context).

²⁵² For instance, Culver City, California, conducted a careful study of amortization costs associated with closing an urban oil field in its jurisdiction, finding that unamortized costs in the field are very limited, as most wells have already repaid their investment and future revenues may be limited. See WILLIAM D. CHEEK ET AL., CAPITAL INVESTMENT AMORTIZATION STUDY FOR THE CITY OF CULVER CITY PORTION OF THE INGLEWOOD OIL FIELD 33 (2020), <https://www.culvercity.org/files/assets/public/documents/city-manager/inglewood-oil-field/bakerobrienreportandexhibi.pdf>.

²⁵³ See Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978).

²⁵⁴ See KARRAS, *supra* note 18, at 12.

²⁵⁵ See *id.*

outmoded facilities are not intended to run indefinitely, and neither are oil and gas field owners entitled to turn a profit on fossil reserves for which—as the world transportation sector electrifies—there will be ever less demand. In essence, although there may be circumstances where a decommission deadline is set soon enough to warrant some compensation, for legal or political reasons, oil and gas companies can no more reasonably expect a future of continued return on investment than could whale oil companies a century prior.

In any event, beginning the public conversation around how to balance the new economy and the old would be a step forward even if, as I expect, setting deadlines and developing decommissioning plans is a contentious process. Our legal structures cannot be expected to avoid conflict. Indeed, setting the clear expectation that change is coming, identifying means to finance it, and beginning the process of putting that change into law is a way of sparking productive conflict that will avoid the alternative possibility of communities being left behind in the coming period of rapid fossil asset closure.²⁵⁶

c. Just Transition Memoranda of Agreement.

Finally, as a weaker but perhaps more expedient form of the prior two suggestions, state or local agencies can opt to collaborate to align their authorities to promote just transition goals. Agencies have broad authority to contract or enter into similar agreements.²⁵⁷ They also generally are carrying out reasonably broad statutory mandates, thereby affording room to design programs in ways that may better promote transition goals (e.g., an air regulator might opt to design air regulations that include retirement or zero emission technology options for aging sources).²⁵⁸ California agencies can anticipate substantial judicial deference to the degree that they reasonably justify these choices.²⁵⁹

These approaches are already in use. For example, Governor Gavin Newsom of California directed agencies to collaborate on just transition plans when he initiated a move towards zero-emission transport in fall of

²⁵⁶ For a compelling argument, rooted in historical evidence, that sustained planning is needed to manage changes in the petro-landscape, see Hein, *supra* note 145.

²⁵⁷ See, e.g., CAL. HEALTH & SAFETY CODE § 39600 (describing the general grant of authority to align its actions with statutory duties for the California Air Resources Board); CAL. HEALTH & SAFETY CODE § 39603 (describing the specific contract authority to California Air Resources Board).

²⁵⁸ See, e.g., 42 U.S.C. § 7411(d) (describing federal air pollutant reduction planning for existing sources, allow for consideration of facilities' remaining useful life in program design).

²⁵⁹ See generally *Yamaha Corp. of Am. v. State Bd. of Equalization*, 960 P.2d 1031 (Cal. 1998).

2020.²⁶⁰ Executives at the state or local level can direct similar collaborations. Indeed, such initial approaches could produce momentum for the more elaborate planning mechanisms that I have described above.

d. Conclusions Regarding Governance Mechanisms

In the end, the work of the just transition is only the work of government, as it involves attempting to manage changes in the economy in ways that allow for continued human services and for community flourishing. But there is reason to think governments will not take on this task without a nudge; after all, it may be politically difficult to announce that one is planning for the dissolution of a long-running economic mainstay. But such forthright planning is necessary. As the many analyses canvassed above demonstrate, transitions occur whether or not they are planned, but planning is necessary to avoid considerable human suffering. The approaches I have suggested here, ideally coupled with financial mechanisms that can put resources behind the plans, provide some potential ways to avoid the usual pattern of communities left behind by economic change.

IV. CONCLUSIONS: PRACTICAL AND THEORETICAL LESSONS

By this point, I hope to have persuaded readers that as we advance toward very substantial economic disruptions and opportunities in the energy sector, we need to plan to help communities share in this new realm of prosperity and to mitigate suffering. I hope also to have persuaded readers that there are real legal solutions available to begin this task—all of which involve constructing oil and gas frameworks at least as sweeping and democratic as those which already govern electricity production, and ideally much more so. In these concluding remarks, I wish to note a few implications of these arguments for both practical advocates and for more theory-inclined readers.

For those planning advocacy campaigns or in government, I would offer the following lessons:

- *Transition failure, not success, is the rule.* There are very few examples in the literature of major economic dislocations that have been handled well for all involved.
- *Success is more likely if economic precarity is reduced.* So long as incumbent interests can tether themselves to workers' and communities' economic self-interest, they will have powerful allies to resist transitioning. If your

²⁶⁰ See Cal. Exec. Order No.-79-20 (Sept. 23, 2020).

health insurance depends on the refinery, you will not welcome its closure. So, general economic and social policies that reduce economic precarity will also create political and practical space for economic change.²⁶¹ This moral and practical argument motivates the Green New Deal as framed by visionaries like Rhiana Gunn-Wright,²⁶² and is also good advice to those who would change existing policy.

▸ *Focus on the community, not just the workers.* Fossil fuel industry workers are often well-compensated, with pensions and salaries that are above local median incomes. They are also generally white men. An intersectional approach should recognize that the vulnerabilities associated with the just transition will be borne even more acutely by the surrounding community, which may depend on the economic transfer from the industry and its workers, but in which many people have less stable jobs, if they are working at all. The goal needs to be to maintain community services—schools, healthcare, and so on—and not just to compensate the workers themselves.

▸ *Insist on tethering capital to the community.* Capital can move, but people often cannot. It is facile to rely only on the prospect of new clean energy jobs somewhere else to compensate for job loss in a particular place. People live in specific places and are grounded in richly intertwined networks of family and friends. They often cannot or will not move. Thus, strategies need to be place-based, and they need to weigh down capital that may otherwise move by capturing it in financial reserves that communities can access over time—perhaps over decades, as dislocations take a long time to run their course.

▸ *Plan to capture capital from new industries, not just incumbents.* Though I have focused on decommissioning fossil fuel resources, the just transition also comes with new industrial landscapes, including what are forecasted to be huge booms in clean energy industries and, perhaps, in greenhouse gas removal (including infant industries like direct air capture). Now is the time to develop industrial relationships with these newcomers that will avoid a repeat

²⁶¹ See Ghaleigh, *supra* note 37, at 7–12 (conceptualizing connections between economic and environmental justice).

²⁶² See Rhiana Gunn-Wright, *A Green New Deal for All of Us*, in ALL WE CAN SAVE: TRUTH, COURAGE, AND SOLUTIONS FOR THE CLIMATE CRISIS 92-102 (Ayana Elizabeth Johnson & Katharine K. Wilkinson eds., 2020).

of the current problem.²⁶³ Though costs upon these industries may need to be light as they start up, we must still insist on fair labor policies, pro-union contracts, community benefit agreements, and revenue capture that can prevent the community benefits from entering industries and help communities manage industries on their way out.

In addition to these practical points, I would offer a few lessons for legal theorists:

▸ *Environmental law, though successful on its own terms, may need new terms.* As academics are increasingly recognizing,²⁶⁴ the environmental statutory regime, with its focus on cleaning up industrial sources, ultimately does not work in the context of equity. Indeed, even within current environmental statutes, agencies are often hesitant to order incumbent industries to close fossil fuel facilities or to insist on zero-emission technology, much less to direct wholesale transitions.²⁶⁵ Though plainly very successful on its own pollution-reduction terms, this framework thus does not offer ready authorities for industrial and labor policy, even though those policy questions are at the heart of the just transition that is necessary to address the climate crisis.

▸ *Reconceptualizing environmental law as just transition law may help.*²⁶⁶ We need to start considering questions about incumbent industry power, industrial policy, and labor power. These are not wholly new questions for the environmental law world, of course. But they sound with ever-increasing urgency. The metrics for legal success—and for law formation—should not just be tons of pollution reduced, but number of jobs in decent work created, and quality of community services supported.

▸ *Theories of democratic change are needed.* Can communities design change for themselves? What does it mean for a planning framework to be just? Is there a democratic path forward for economic planning? We need

²⁶³ Regarding the considerable importance of governments to green industrial policy – and the potential for government action to accelerate the transition, and hence the potential for governments to insist that the transition be fair to communities and workers, see Dani Rodrik, *Green Industrial Policy*, 30 OXFORD REV. ECON. POL'Y 469 (2014).

²⁶⁴ See Purdy *supra* note 85; see also Park, *supra* note 85.

²⁶⁵ See, e.g., Sage Ertman, *Climate Change and the PSD Program: Using BACT to Combat the Incumbency of Fossil Fuels*, 47 ENV'T. L. 995 (2017) (arguing that under the federal Clean Air Act, agencies regularly fail to require industries to use zero emission technology for new and modified sources, even though they have the authority to do so); see also *Friends of Buckingham v. State Air Bd.*, 947 F.3d 68 (4th Cir. 2020) (calling this behavior into legal question under Virginia state law).

²⁶⁶ See Doorey, *supra* note 10.

a law of economic preservation that accounts for the realities of democratic deficits and the need for shared consensus and democratic legitimacy in planning a path forward.²⁶⁷

Ultimately, this is an exciting time to be alive. Legal and political choices made in the next few decades will set the pattern of life for the next millennia. As we dismantle and reform one of the world's largest industries, we have a chance to form a new consensus on the shape of society. That shape will emerge from a constellation of community choices, a polycentric chorus of transitions now taking shape all across the world.²⁶⁸ This is the time to help ensure those choices are made democratically, openly, and with deep concern for justice.

²⁶⁷ A need which is, if anything, even more acute outside of the U.S. Although the Global South is not the focus on this paper, I am acutely aware that both fossil energy shutdowns and clean energy growth can be even more destabilizing beyond American borders. *See, e.g.,* Erin Baker et al., *Who is Marginalized in the Energy Justice? Amplifying Community Leader Perspectives of Energy Transition in Ghana*, 73 ENERGY RSCH. & SOC. SCI. 101,933 (2021) (discussing reparative efforts and community-led approaches to address these issues); Leah Temper et al., *Movements shaping climate futures: A systematic mapping of protests against fossil fuel and low carbon energy projects*, 15 ENV'T. RSCH. LETTERS 123,004 (2020) (describing global protests against both old and new energy projects).

²⁶⁸ *See* Elinor Ostrom, *A Polycentric Approach for Coping with Climate Change*, 15 ANNALS ECON. & FIN. 97 (2014)