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The forms of climate action

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Abstract

Scientific research on the mechanisms to address global warming and its consequences continues to proliferate in the context of an accelerating climate emergency. The concept of *climate action* includes multiple meanings, and several types of actors employ its use to manage the crisis. The term has evolved to incorporate many of the suggested strategies to combat global warming offered by international bodies, states, nongovernmental organizations, the private sector, and social movements. The present work offers a classification scheme to build a shared understanding of climate action through a lens of environmental justice and just transitions developed by sociologists and others. The classification system includes major institutional and noninstitutional forms of climate action. By identifying the primary forms of climate action, analysts, scholars, policymakers, and activists can better determine levels of success and how different forms of climate action may or may not complement one another in the search for equitable solutions in turning back the rapid heating of the planet.

KEYWORDS
climate action, climate planning, environmental justice, environmental threat, extraction, just transition, social movements

1 | THE FORMS OF CLIMATE ACTION

The accelerating climate crisis calls for a myriad of strategies to turn back the current trajectory of global warming before irreversible ecological tipping points are reached. Indeed, in 2023 alone, the amount of CO_2 in the atmosphere reached an all-time high for human civilization (at 424ppm), a large 3ppm annual increase over 2022 levels (NOAA, 2023), while July through September 2023 were the warmest months for the average earth surface temperature ever recorded.[1] This massive ecological threat and associated risks encourage urgent action on multiple fronts (Fisher & Jorgenson, 2019; Johnson & Frickel, 2011; Shriver et al., 2015). Climate scholars and policymakers usually focus on assessing approaches to prevent increases in the average surface temperature of the earth to no more than 1.5 degrees Celsius by 2030 (IPCC, 2023). The most wide-ranging concept encompassing most collective efforts to address global warming is referred to as *climate action*. Governments, private corporations, international bodies affiliated with the United Nations, philanthropic foundations, universities, environmental nongovernmental organizations, and social movements all use the same terminology of climate action.

To bring coherence to arguably one of the most critical concepts of the twenty-first century, a classification scheme defining different forms of climate action is offered below. Special attention is given to the meanings, motivations, and employments of the concept by different institutions and actors as well as the potential for low-carbon just transitions. The classification system centers on distinguishing between institutional and non-institutional climate actions and corresponding forms within each category. At the same time, we incorporate the sociological literature on environmental justice to suggest how different strands of climate action may strive against reproducing existing forms of domination and subordination as well as avoid new patterns of inequality and exclusion (Klinenberg et al., 2020; Wang & Lo, 2021). Such frameworks intentionally center on the unequal distribution of environmental hazards, including climate vulnerabilities and losses (Pellow, 2020), along the lines of race, class, gender, immigration status, and geographic location (Alvarez, 2021; Bullard & Wright, 2012; Taylor, 2014). Environmental justice struggles and principles that link to multiple types of climate action orient future rounds of action towards just transitions. From the perspective of environmental justice communities, the environment is defined as where people "live, work, and play" and there is a basic "need to have a clean, healthy workplace and community" (Moore in Almeida, 1994, pp. 22–23). We conclude by suggesting ways that institutional and non-institutional forms of climate action interact with one another.

1.1 | Institutional climate actions

Institutional climate action includes those activities initiated by organizations and groups using routine and formalized procedures to achieve goals of reducing greenhouse gas (GHG) emissions and preparing for adaptation and resilience. Some of the major forms of institutional climate actions involve the following initiatives: climate action planning; policy transitions to green and renewable energy systems; and cap and trade/offsets or carbon markets.

Climate Action Planning: Climate action planning is probably the most widespread form of institutionalized climate action. International bodies as well as national and regional governments may encourage climate action planning. Also, many non-governmental entities and professional environmental consulting firms team up with state actors to engage in climate action programming and design. Much of climate action planning takes place at the municipal level across the world. Indeed, city governments have authority over major sources of carbon and other GHG releases via zoning, industrial regulation, and land use (Zhifu et al., 2019). Most climate action planning programs incorporate the strategies of mitigation, adaptation, and resiliency.

Mitigation involves cutting GHG emissions. At the global, national, and local levels, governments commit to reducing their GHG emissions to precise targets, including nationally determined contributions (NDCs). At the city level, urban planners and climate consultants develop greenhouse gas inventories to measure current and future emissions to assess the achievement of benchmarks. They also develop programs enhancing mitigation such as urban

reforestation, carbon sequestration in soils, and other natural climate solutions. Mitigation served as the focus of climate action planning in the 1990s and early 2000s, which has been critiqued as carbon reductionism, when other social dimensions of the climate crisis remain unrecognized (Méndez, 2020). Since the 2010s, climate planners have increasingly incorporated issues of adaptation and resiliency strategies, along with a more recent emphasis on equity.

Adaptation involves adjusting physical infrastructure to prepare for climate-change related changes in the local environment. This may mean building higher levees to prevent coastal and river flooding to the construction of cooling centers for vulnerable populations to reside during excessive heat waves and wildfires. Resiliency is often closely associated with the strategies of adaptation (Center for Climate and Energy Solutions, 2019). Resiliency is the capacity of a given community to overcome and adapt to environmental disturbances and unexpected climate-related changes. This capacity is built through the density and quality of the existing social infrastructure (common spaces for free gathering, from public parks to community gardens). The physical and cultural environment improves the quality of social capital and ability to withstand and recover from extreme weather events (Klinenberg, 2019). Transition Towns, a transnational climate action -particularly prevalent in the Global North– have organized entire municipalities with the explicit goal of increasing resilience in urban planning and adaptation (Brunetta & Baglione, 2013; Haxeltine & Seyfang, 2009).

Since the early 1990s, cities across the world have engaged in climate action planning, developing climate action plans (CAPs) at the municipal level. Several initiatives encourage the rapid diffusion of climate action planning and CAPs. One of the early leaders was the international environmental nongovernmental organization (IENGO) Local Governments for Sustainability (ICLEI). ICLEI is active in 125 countries with over 2500 affiliated cities working on climate action planning, especially mitigation. Similar global initiatives of local level climate planning include C40 cities and the Covenant of Mayors (and Cities Mission in Europe). Such initiatives as ICLEI, C40, and the Covenant of Mayors provide a transnational organizational infrastructure (Smith & Wiest, 2012) to sustain local level climate action planning across the planet.

Cities committed to climate action planning also encourage GHG emissions reduction in private industries operating within their jurisdictions (Leffel, 2022). The state of California alone has 175 city level climate actions plans registered with the Air Resources Board. More progressive CAPs encourage the participation of local civic groups in the design and implementation of the plan. Participation by grassroots organizations builds solidarity and promotes future rounds of environmental participation (Almeida et al., 2023; Grant et al., 2020; Staggenborg, 2020).

Given the planetary scope of climate change, the United Nations has played a coordinating role for climate action planning. These major climate action efforts include the 1992 Rio Summit/Agenda 21; the 1997 Kyoto Protocol; and the 2030 Agenda for Sustainable Development in 2015. The United Nation's first global climate action planning efforts commenced with the 1992 United Nations Framework Convention on Climate Change (UNFCCC), established during the Rio "Earth Summit" (Fisher, 2004). The UNFCCC supports nations in examining their respective contributions to global warming and climate change. This UN body instituted three principles: the precautionary; common but differentiated responsibility; and rights to development (Bohringer, 2003; Christoff, 2016; Fanning and Hickel, 2023). The principles provided a structure on which subsequent UN-led global climate change meetings were organized, known as Conference of Parties (COP). In 1993, the United Nations Environment Program (UNEP) co-sponsored a new initiative with ICLEI to encourage city governments to begin GHG reduction plans on multiple continents – the Cities for Climate Protection.

The 1997 COP3 meetings developed the Kyoto Protocol with precise mechanisms to implement the UNFCCC principles. Kyoto set targets to stabilize global temperatures through the reduction of GHG emissions by 5.2% (notably CO_2 from fusil fuel combustion) below 1990 aggregate levels by 2012 (Babiker et al., 2000; Bohringer, 2003). The Kyoto Protocol required that highly industrialized nations commit (in a binding agreement) to reducing their GHG emissions and marked the beginning of concrete global climate planning actions. COP15 in Copenhagen in 2009 took a step further to press for mandatory obligations for highly industrialized nations to cut emissions (but failed to reach an accord). In 2015, the Paris COP21 scored another advancement in planetary-level climate action by harmonizing the disagreements in previous COP negotiations (especially in Kyoto and Copenhagen) to secure the first

inclusive, globally accepted, and binding climate change agreement (Gomez-Echeverri, 2018). The agreement emphasized the urgent need to limit global average temperature to 1.5°C above preindustrial levels or at least below 2°C by 2030, and included the principle of the common but differentiated responsibilities in efforts to combat worldwide GHG emissions (Christoff, 2016; Fanning & Hickel, 2023). 193 governments signed the Paris Accords and voluntarily declared their intended nationally determined contributions (NDCs).

As the world's major GHG emitters, highly industrialized nations tend to be the focus of COP negotiations, while other UNFCCC initiatives engage developing countries with a variety of climate financing programs to promote climate action. These include initiatives such as the Reducing Emissions from Deforestation and Forest Degradation program (REDD+). The global south is experiencing rapid deforestation and the forest canopy serves to stabilize global temperatures as a carbon sink while increasing GHG emissions when destroyed by clear cutting or mass burning (Bas Louman et al., 2019; Hecht et al., 2016). Through REDD+, the United Nations, in collaboration with national governments, implements substantial forest preservation and reforestation projects at regional, national, and local government levels across the global South. Also, the United Nation's Environment Program (UNEP) advocates for climate action in the global South through the following: ecosystem resource management; communication and dissemination of environmental materials through all forms of education; spatial planning and urban design; sustainable tourism and efficient transport; and efficient water and sanitation systems; among other green practices (UN Environment Programme, 2016). UNEP's Climate Action program promotes innovation based on the best sustainability practices to influence positive attitudes and behavioral change to build environmentally resilient communities. In Africa, UNEP is collaborating with the African Ministerial Conference on the Environment to implement climate action through selected formal and informal education and training, social learning, networking, and capacity building systems.

The United Nations 2030 sustainable development goals (SDGs) agenda, established in 2015, provides a collective climate action planning entry point to both the developed and developing world. Though all 17 goals of this agenda address environmental issues in several ways, Goal 13 (climate action) encourages UN member states to incorporate the UN global climate agenda in their policies and actions in terms of planning, policies, institutional and individual capacity building, and project financing (Gomez-Echeverri, 2018; Mortimer et al., 2023). Overall, SDG 13 provides guidelines shaping national climate action planning around the world through various regional, national, and local level initiatives.

To date, 27 annual COPs have taken place in various parts of the world. Each COP convening has representatives from most of the nations of the world in attendance, and each gathering continues to promote climate action planning at the national and local levels. The most recent COP (COP 27) in Cairo, Egypt in late 2022 contributed to moving beyond mitigation and carbon reduction by incorporating the historic "loss and damage" fund for the most vulnerable countries. This outcome acknowledges accountability for historical emissions in the global north and serves as a starting point to consider a just transition at the international level, and perhaps climate reparations. Nonetheless, extraordinary resources would need to be invested in this loss and damage fund to achieve transformational impacts, much more financing than the current funding allocated for climate adaptation in poorer countries.

A major concern of sociological scholarship resides in the level of coverage and equity in climate action planning (Angelo et al., 2022; Roy et al., 2022). Since most climate action planning occurs at the city level, many cities, smaller towns and rural regions lack protection. Cities engaging in climate action plans and greenhouse gas inventories tend to be concentrated in the global North and in the largest metropolises in the global South. Even where climate action planning occurs on a large scale, equity issues are often left out. For example, Angelo et al. (2022) found that in 170 local climate action plans in California, 39% of plans made no mention of equity.

Policies Promoting Green and Renewable Energy: Another form of institutionalized climate action planning by states and NGOs centers on renewable energy to replace electricity and transportation systems dominated by GHG-based fuels. Utility companies and corporations often lead climate action around renewable energy in the context of external pressure from environmental organizations (Vasi, 2011, 2018a). Environmental scientists refer to this transformation as the Fourth Energy Transition (Perkins, 2017). These actions also include the phasing out

of fossil fuel extraction within nation-states. By 2022, the European Union supplanted natural gas with renewable energies as a main source of electricity (especially biomass, solar, and wind). In petrostates these transitions face many more obstacles, with clear economic incentives to continue with the status quo. Nonetheless, petrostates such as Brazil have invested heavily in renewable energies, especially wind power since the 2000s, accounting for nearly 10% of electricity consumption (Hochstetler, 2020). In California, the state has supported a major initiative for cities to join a community choice alternative energy program, known as Community Choice Aggregators (CCAs). CCAs provide an option away from investor-owned utilities that often rely on fossil-fuel based energies (Hess, 2019). CCAs largely use renewable energy sources to power local cities. As of the early 2020s, over 175 cities in California were members of such programs.

Scholars, activists, and communities concerned with just transitions and environmental justice address green energy transitions with a focus on the labor conditions of green energy production, the impacts on communities in terms of green energy generating facilities, access to low-cost electricity, job displacement in the fossil fuel sectors, and the creation of high-road green collar employment (CEJA, 2020; Wang & Lo, 2021). Just transitions based on renewable energies are unlikely to occur by only adding new alternative sources of power to the existing treadmill of production (Gould et al., 2008) and electrical distribution grids. The treadmill of production perspective acknowledges that natural resources and economic inputs are finite. The active suppression of fossil fuel extraction and production would be a necessary first step to pushing forward a complete transition, as current trajectories and earlier energy transitions indicate continued fossil use on a massive scale (York & Bell, 2019).

Carbon Markets/Offsets: From a world society theory perspective (Schofer & Hironaka, 2005), states and transnational corporations are under normative and mimetic pressures to reduce their carbon emissions/footprint via United Nations treaties, international environmental nongovernmental organizational advocacy, and successfully implemented models. The ecological modernization approach would also predict green upgrading by governments and firms in the most advanced industrial and technological sectors in capitalist economies (Fisher & Freudenburg, 2001; Spaargaren & Mol, 1992; York et al., 2010). One of the favored climate action policies to address climate change by large emitting countries in the global North is via cap-and-trade markets (Bond, 2012). Such programs allow GHG discharging industries to trade emission rights in a regulated market that gradually lowers the "cap" on the overall level of emissions. Industrialized states advocated for carbon markets during the Kyoto Protocol of 1997 working with the United Nations Framework Convention on Climate Change (Walenta, 2020).

COP16 in Cancun in 2010 and The Paris Agreement of 2015 (COP21) strengthened this type of market-based approach to climate action (such as through the Green Climate Fund) at the same time social movement and global South alternatives for climate financing and payments for a climate debt were marginalized. Some progress was made during COP27 in Egypt in 2022 where participating nation-states agreed to a "Loss and Damage" fund to support the global South and move global North climate financing away from a mitigation focus and more towards adaptation. As of 2020, according to one estimate, only about 25% of the $100 billion committed in annual climate financing for developing countries since COP21 was delivered (Oxfam, 2023). International policy scholars view this severe underfunding by the global North as a failure in terms of both procedural and distributive justice for the most climate-impacted populations in low-income countries (Roberts et al., 2021). Major international conferences convened in the global South, such as in Bolivia in 2010 and 2015, also involved global South countries and representative civil society organizations demanding immediate payment for the climate debt owed by wealthier nations for historic GHG emissions and associated ecological damages, what climate scholars call ecologically unequal exchange (Jorgenson, 2016).

The European Union Emissions Trading System allows European actors (states and private firms) who intend to reduce their greenhouse emissions to purchase "carbon" currency in this financial market. In exchange, companies and other actors across the globe that produce those carbon currencies receive economic payments for the capture or reduction in production of greenhouse gases (Hepburn, 2007). This type of trade has become the most important driver of carbon emission reduction in the European Union in the 21st century (European Environment Agency, 2022). Besides the European system, other countries have created their own cap-and-trade markets, such as

New Zealand and China. Besides carbon trade markets at the international or national level, subnational states and localities have introduced this institutional form of climate action. Local cap and trade systems exist in New South Wales, Australia as well as in Tokyo (Perdan & Azapagic, 2011; Zhao et al., 2017). This is also the case in the United States, with the California carbon market (one of the largest in the world) or the US Regional Greenhouse Gas Initiative (Méndez, 2020; Perkins, 2022). It is important to underscore that most of the companies and (public or private) actors receiving funding from cap-and-trade markets for reducing or capturing carbon emissions (i.e., carbon offsets) operate in countries of the Global South. These countries have differential capacities to adjust and facilitate transactions in these types of markets (Lucas Garín, 2018; Oh & Chua, 2010).

There have been attempts to redistribute cap and trade funds to climate vulnerable populations. Legislation passed in California in 2012 requires that at least 25% of the revenues generated through the state's cap and trade program be directed to disinvested communities – low income and suffering disproportionate pollution levels. The funds from the California Cap and Trade program have generated $22 billion as of 2023. Nonetheless, environmental justice organizations and global South nations continue to express concern how carbon offsets allow for continued GHG emissions that often involve co-pollutants which harm the health of marginalized communities (Méndez, 2020). Some environmental justice organizations (as well as scholarly experts) prefer a direct tax or fee on carbon emissions that can incentivize more drastic reductions (Perkins, 2022; York & Bell, 2019).

Other emerging institutional climate actions include: climate action education; insider advocacy from traditional environmental organizations (Harrison, 2019); city declarations of climate emergencies; carbon capture and storage (CCS) and Direct Air Capture (DAC) and several other related technologies; climate reparation lawsuits; and referendums on oil drilling and extraction. These emerging and institutionalized climate actions would also benefit with more direct collaboration with frontline communities most impacted by climate change.

1.2 | Non-institutional climate actions

The climate crisis continues to escalate with steady planetary warming and increasing carbon levels in the atmosphere. Organized segments within civil society view these unfavorable developments as motivation for noninstitutional forms of climate action. Under this set of strategies more disruptive tactics and campaigns are employed to leverage more drastic measures to address what is perceived as a climate or environmental emergency. Three major forms of noninstitutional climate action include: transnational climate movements; local level mobilizations against extraction; and fossil fuel divestment campaigns.

Transnational Climate Movements: Environmental scholars often employ political process and network-based social movement models to examine the climate actions of international movements addressing global warming (Hadden, 2015). Climate-based social movements characterize the non-institutional sphere of climate action. Since the mid-2000s, climate movements have focused their actions on major international conferences addressing climate change, especially the United Nations-sponsored Conference of the Parties (COP) that take place annually. The increase in climate protests emerged in the context of slow progress at the institutional level, such as when the United States (under the Bush Administration) pulled out of the Kyoto Protocol in 2001.

Between 2005 and 2008, days of global action were held around the same time as annual UN COP meetings (with noninstitutional climate action attempting to influence institutional types of action). These campaigns were largely sponsored by groups and organizations participating in the World Social Forum as well as the transnational environmental organizations Greenpeace and Friends of the Earth. The loose coalition called itself the Global Climate Campaign. The 2005 to 2007 global climate street actions demanded the United States and Australia to re-enter the Kyoto Protocol agreement and commit to reducing GHG emissions. By 2008, mobilizations were preparing for COP15 in Copenhagen and the revitalization of commitments by nations in the global North to reduce GHG emissions and finance green transitions in the global South. In this period, the number of countries participating in global protest actions over global warming doubled, from 34 nations in 2005 to 69 nations in 2008.

By 2009, the global climate protest movement picked up substantial momentum with over 5000 protest events across 149 countries between September and December in the buildup to the Copenhagen COP15 meetings (Chase-Dunn & Almeida, 2020). At this time, more international coordinating organizations came into existence acting as brokers connecting groups and cities in the international climate protest network that otherwise would not be linked. These groups and coalitions included 350.org, AVAAZ, The Global Campaign for Climate Action (GCCA), and other more traditional international environmental organizations. The transnational climate movement sustained itself after COP15, with days of global climate protests between 2010 and 2015 in preparation for COP21 and the Paris Climate Agreement to bolster national commitments in light of the breakdown of negotiations during the Copenhagen conference.

In the aftermath of COP21, there was a lull in massive street protests coordinated globally between 2016 and 2017. The transnational climate movement was revived with the People's Climate Summit in San Francisco in October of 2018, once again generating global solidarity protests. Shortly after, in early 2019, young people took up a vanguard role in the global climate movement with the rise of Fridays For Future (FFF) in Europe and the Sunrise Movement and Zero Hour in the United States (Fisher, 2019). FFF was especially important by moving beyond major days of action just once or twice annually, by holding protest events every Friday (de Moor, De Vydt, Uba and Wahlstrom, 2020; de Moor, et al., 2020). FFF spread rapidly around the world peaking at coordinating over 5000 events in late September of 2019, including notable mobilizations in Africa with a strong campaign in Uganda. The global climate movement likely would have reached new heights with the planning of massive mobilizations around the fiftieth anniversary of Earth Day during April of 2020. The global covid pandemic moved transnational climate organizing online for the next 3 years and dampened the level of street protests. In these same years, more radical transnational climate groups also appeared on the scene with aggressive and assertive tactics such as Extinction Rebellion (Saunders et al., 2020), with 1265 chapters in 79 countries across 6 continents (Gardner et al., 2022).

Besides the recent developments of FFF and Extinction Rebellion, most of the transnational climate protests have largely followed the organizing template of the global economic justice movement of the late 1990s and early 2000s (global days of action) – hold massive and multiple protest events in the city of an international meeting and coordinate dozens to hundreds of simultaneous solidarity protests around the world (Almeida & Lichbach, 2003). In the case of the climate movement, this means activists organize in the city of the annual COP meeting (or outside of the United Nations offices in New York City in 2014 and 2019) while coordinating hundreds to thousands of solidarity events across the globe. This form of climate action focuses on placing pressure on nation states while they are directly negotiating international climate policy and institutionalized climate actions. The future challenge for the global climate movement centers on picking up on the sustained momentum it had in the late 2010s and connecting more directly with local environmental justice and extraction struggles (Almeida, 2019). Such coalitions can widen the grassroots base of the international climate movement while incorporating the economic and environmental demands of frontline communities in addition to carbon reductionism (Perkins, 2022).

Local Extraction Struggles: In contrast to transnational climate movements, centered mostly in cosmopolitan cities and occurring during annual meeting events on the global stage, anti-extraction movements localize in peripheral areas and refer to the ordinary struggles of marginalized communities (Martinez-Alier, 2021). In this regard, they occupy an opposing quadrant of transnational social movements, as "glocal" forms of protest (Auyero, 2001; Tarrow, 2005). Struggles against extractivism constitute a reaction to a form of appropriation of nature inherent to the global treadmill of production (Gould et al., 2008; Svampa, 2019). The extraction of raw materials is a necessary first step of global commodity production chains (Smith, 2005), in which nature is reduced to a mere resource input (Gudynas, 2020; Schnaiberg, 1980). Extraction activities often occur in "sacrifice zones" (Kuletz, 1998). From a political process perspective, community level mobilization against extraction of raw materials emerges in response to the ecological threats of immediate environmental damages (Arce, Hendricks, and Pozi, 2023; Spalding, 2023). Local villages mobilize over the redistribution of harms and benefits from development projects (Arce, 2014; Jaskoski, 2022) that often involve large impacts on global warming, such as through deforestation and the undermining of low carbon local economies by disrupting surrounding ecosystems.

An increasing share of anti-extraction movements incorporate explicitly climate change action as a prominent part of their organizational and mobilization demands and repertoires. This includes protest against the expansion of the oil extraction frontier, as in the case of exploration and exploitation of oil in the Amazon or the Niger Delta (Frynas, 2001; Lewis, 2016), or the opposition to new coal mining projects in China and natural gas in Russia. Also, anti-extraction movements have turned their attention to non-traditional forms of extraction of fossil fuels, such as the mobilizations against the tar-sands in Canada or fracking of oil and gas in the US (Auyero et al., 2019; Grosse, 2022; Haluza-DeLay, 2012; Vasi et al., 2015). The anti-fracking movement has been especially strong in the United States since the 2000s (Ladd, 2018; Vasi, 2018b). In addition, proposed energy extraction projects do not always lead to oppositional campaigns (McAdam & Boudet, 2012; McAdam et al., 2010). Beyond the direct extraction of greenhouse fossil fuel sources, climate-related mobilization has emerged as well against infrastructure projects involving the transport of fossil fuels across indigenous lands (Fenelon & Alford, 2020). Examples of climate action against fossil fuel transportation projects include the Keystone, the Dakota Access and the Mountain Valley oil pipelines in the US, the gas pipelines across Europe (Bradshaw, 2015; Christopolous, 2021; Whyte, 2019), and the East African Crude Oil Pipeline (EACOP) blocked by local communities in Tanzania and Uganda. When no collective mobilization occurs, these types of projects are much more likely to be approved and implemented (McAdam & Boudet, 2012).

We can also define extraction struggles as climate action when they focus on protecting forests and defending natural reserves from clear-cut logging and soil/land degradation such as the Chipko movement in India (Shiva & Bandyopadhyay, 1986) and sustainable farming (including agroecology) by indigenous and rural communities in Central and South America (García Latorre, 2020). Finally, in recent years local climate action movements have put their attention in the extractivism of "clean" energy sources. Examples involve campaigns against biofuels and megadams in the Amazon and India (Huber et al., 2017; Schoering, 2021), and Lithium mining in the Southern Cone of South America (Kingsbury, 2022). Environmental justice groups have also mobilized against biomass energy facilities in the Central Valley of California over concerns of increased air pollution in an already environmentally compromised region. Environmental justice frontline communities prefer composting and mulching of agricultural waste over burning for energy generation.

Identifying local environmental extraction campaigns as climate action links the larger global climate movement to daily struggles at the point of initial fossil fuel production and supports campaigns to "leave it in the ground" while simultaneously addressing the health and pollution damages of the industry (Farrell, 2012). An inventory of over 3000 environmental justice struggles across the global found that one third of the conflicts impacted indigenous peoples and indigenous lands, and over 30% of those cases involved fossil fuel extraction or deforestation (Scheidel et al., 2023). Bringing in representatives and communities from frontline environmental justice struggles into national and international climate organizing as central voices, shapes the terrain of struggle in the direction of urgent action. Such climate actions immediately call GHG emitters to accountability and focus attention on climate vulnerable populations. These types of noninstitutional climate action collaborations assist local environmental justice struggles in scaling up to higher levels of political authority whereby their grievances are less likely to be ignored or suppressed.

Fossil fuel divestment campaigns: Environmental groups, universities, civil society and human rights organizations, faith-based institutions, tribal and indigenous peoples around the world increasingly use public media and social media platforms as well as boycotts, shaming, sit-ins, rallies, share-holder takeovers, and street protests as key tactics to force states, funders, investors and producers to consider divestments in fossil fuel (Arabella Advisors, 2016; People and Planet, 2023; Seidman, 2015). Divestment campaigns demand a different type of global grassroots climate action targeting the sources of GHG emissions, as institutional strategies of global and national carbon reductions move at too sluggish of a pace and face powerful interests against policy implementation (Seidman, 2015). The climate action protest efforts from universities (students, faculty and staff) in North America and Europe have succeeded in pressuring many higher education institutions to consider fossil fuel divestment (i.e, the non-institutional action forced and institutionalized climate action outcome). Protest campaigns and moral arguments have also persuaded organizations and major philanthropic foundations, such as the Hewlett, Rockefeller and Bill and Melinda Gates foundations, to

sell off their stocks in fossil fuels and/or seek investment opportunities in the renewable energy sector (Braungardt et al., 2019; Roberts, 2015).

Large-scale businesses and financial institutions, along with major insurance companies, have invested billions of dollars in the fossil fuel industry. The fear of boycotts and the reputational, financial and legal risks posed by the actions of divestment movements have pushed them to either reduce or stop funding fossil fuel production and also find divestment opportunities (People and Planet, 2023; Seidman, 2015). World Society theory mechanisms of de-legitimation within organizational fields and political economy concerns of revenue loss likely drive disinvestment behavior by financial institutions (Armbruster-Sandoval, 2005). Some of the campaigns directly targeting large oil, gas and coal mining corporations have produced relatively successful outcomes (Brulle, 2014; People and Planet, 2023).

Other divestment campaigns target governments. For instance, in 2016, 303 faith leaders from 58 countries formed the Interfaith Climate Statement during COP22 in Marrakech, Morocco. The Interfaith climate action coalition included Buddhist, Christian, Hindu, Jains, Quaker, Muslim, Sikh, Unitarian Universalist, and Indigenous and Spiritual leaders. They advocated for governments and institutions to divest from fossil fuels and increase the funding of climate change initiatives (Arabella Advisors, 2016). Overall, green economic transitions could accelerate with current fossil fuel investments transferred to the renewable energy sector, especially to firms and parastatal companies that use high labor standards and guided by the environmental justice principles of prevention, precaution, and avoidance of harms (Bullard & Wright, 2012).

2 | DISCUSSION AND CONCLUSION

Table 1 summarizes the preceding discussion of the major forms of institutional and noninstitutional climate action. It also includes strategies suggested by climate scholars, policy-makers, and activists to increase the likelihood of low carbon just transitions and environmental justice for each form of climate action. While we classified each type of action for analytical clarity, the actual overlap between forms of climate action provides promising ways to deepen the level of equitable strategies while confronting the climate crisis. One way to consider this overlap, is observing how noninstitutional forms of climate action often result in institutionalized outcomes. To begin, we need to acknowledge the existing conflicts of interest within and between different forms of climate action among the actors as serious tensions blocking just transitions (Ciplet & Harrison, 2020). Hence, we focus on the overlaps with the greatest potential for enacting just forms of climate action.

Climate action planning, from the city level to United Nations programing, needs to both expand coverage to more vulnerable populations and geographic regions and develop more equity criteria in existing plans and renewable energy alternatives. Renewable energy industries and advocates could develop closer relationships with the populations where the transition and infrastructure are occurring and create low-cost electricity access to marginalized communities as well as high wage jobs in the green energy sector (green collar employment). Where such scenarios have occurred, there was external pressure from noninstitutional actions by the environmental justice movement. The renewable energy sites of production, including wind turbine and solar array installation among many others, should include high wage employment and unionization options. Best practices for renewable energy production avoid increases in air pollution and new environmental hazards for nearby residents. A power coalition of environmental justice communities with labor unions and the green energy sector may lead to a deeper just transition (Ciplet, 2022). In the past, such blue-green alliances played a key role in forcing the state to compensate regions contaminated by industrial activities. In Japan, after extensive disruptive and noninstitutional collective actions, including labor strikes, the state finally created an institutionalized program to regulate pollution in one of the most environmentally contaminated countries in the global North (Almeida & Stearns, 1998).

Carbon markets and cap and trade programs would benefit by eliminating carbon offset arrangements and from enforcing legally binding timelines to the phasing out of fossil fuel use by firms and states. A fee or direct tax on GHG emissions and fossil fuel extraction whereby the state channels the funds to polluted communities in the global North

TABLE 1 The forms of climate action.

Institutional forms of climate action	Examples	Just transition and environmental justice dimensions of climate action
Climate action planning	City level climate action plans discussing mitigation (e.g., GHG inventories and emission reduction goals) and resiliency. United Nations programs encouraging national level actions such as sustainable development goal (SDG 13)	Build incentives into climate action planning so more vulnerable populations and geographic regions are covered by such plans (such as state mandates). In current climate action plans, build more equity and just transition considerations in addition to mitigation. Invest in and involve key local stakeholders in decision-making and planning design such as community-based organizations (CBOs) and labor unions/groups.
Renewable energy policies	Programs and policies that substitute fossil fuel-based energy for renewable energy, especially wind, solar, hydropower, biomass/bioenergy, and geothermal	Prepare economically excluded and low-income populations for the green energy transition with highroad jobs. Unionize renewable energy industries. Provide access of low-cost electricity from renewable energy to marginalized groups. Forge blue-green (environmental justice) alliances to hasten the transition
Carbon markets/offsets/footprints	Government and corporate strategies to reduce GHG emissions through market based-solutions	Convert carbon markets to a carbon tax with redistribution of funds to climate vulnerable and environmental justice communities. Set a definite and binding phase out date for fossil fuel emissions and extraction.
Noninstitutional form of climate action		
Transnational climate movements	Protest movements that carry out climate campaigns across countries and make global demands on nation states and international bodies to reduce GHG emissions via street marches and other disruptive actions.	Place more emphasis on connecting with pre-existing environmental justice organizations as a mass base for climate movement and coalitions with marginalized populations. Continue momentum of constant actions and community organizing instead of annual global days of struggle
Local extraction struggles	Local level struggles over the extraction, transportation, and processing of fossil fuels. These conflicts also involve green energy alternatives and their impacts on vulnerable communities at the sites of generation/production/processing.	Local extraction struggles serve as a potential mass base for institutional and noninstitutional forms of climate action. When extraction struggles link with other forms of climate action it increases the probability that the issues and concerns of environmental, economic, and ethnic/racial justice will be incorporated into programs, initiatives, and strategies.
Fossil fuel divestment campaigns	Major campaigns using social movement tactics such as boycotts to pressure large scale corporations, the banking sector, governments and institutions to terminate financial investments in fossil fuel-related industries	Financial institutions invest in alternative energy industries that practice equity, high labor standards, and environmental justice in place of fossil fuel industries.

and climate-vulnerable populations in the global South would be one mechanism for speeding up the low carbon transition as an alternative to cap and trade initiatives (also consistent with the divestment movement's goals). Environmental justice activism in California influenced the state government to redirect a portion of the cap and trade funds to low income and polluted communities (Perkins, 2022). The transnational climate movement's current trajectory of holding more constant mobilizations, as opposed to annual campaigns around the COP meetings (whereby the noninstitutional protests have gradually changed UN climate policy and institutional climate actions over issues such as climate financing and loss and damage recognition in the global South), will continue to place pressure on national and international policy-making bodies. At the same time, more direct engagement with environmental justice communities and extraction struggles would greatly enhance a more organic "climate justice" focus within the transnational climate movement (well beyond the rhetoric of climate activists on the streets). This is also the same for divestment campaigns to consider re-routing investments and financing to highroad green energy sectors, environmental justice communities, and those regions most impacted by climate change. The urgency of local environmental justice struggles provides a guide to the multiple forms of climate action, by highlighting excluded communities and the likely environmental consequences of inaction.

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CONFLICT OF INTEREST STATEMENT
The authors declare no conflict of interest with this study.

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ENDNOTE
[1] https://www.abc.net.au/news/2023-10-05/nsw-new-record-warm-summer-september/102938932

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