

# Climate Policy, Energy Justice, and the Role of Democratic Institutions

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## Abstract

*Climate policy addresses the risks associated with climate change and comprises a large range of policy measures to mitigate it. Different policy instruments can be used to promote the shift to energy sources that emit no or at least fewer greenhouse gases (GHGs). Measures can also be taken to reduce the intensity of GHG emissions at given energy consumption levels and to promote reductions in energy consumption. Energy justice examines the processes through which energy is extracted, converted, distributed, and consumed, and emphasises several fundamental principles that are politically relevant to decision-making through a justice lens. Democratic institutions encapsulate mechanisms for accountability that prevent the systematic implementation of unjust policies. Further democratic institutions can enable the fair engagement of all affected parties through deliberative processes and participatory budgetary platforms. Policy instruments that promote the equitable distribution of burdens and benefits have been widely employed across countries and regions. Climate policies impact the price, availability, and forms of energy services. Climate policies influence the prices and availability of key activities and services, thereby determining access to them and potentially affecting individuals' participation in public life. (Finley-Brook & L. Holloman, 2016)*

**Keywords:** Climate Policy, Energy Justice, Democratic Institutions, Equity and Participation, Sustainable Energy Transition

## **1. Introduction**

Climate change poses great risks to human societies and natural systems worldwide. Although it has increasingly been acknowledged that climate change threatens people's fundamental rights (e.g., the right to life, a healthy environment, food, and water), climate extreme events and their future risks are still not taken into sufficient account in decision-making processes. Decisions related to development programs, natural resource management, and waste management are still likely to cross the limits of a safe climate envelope (Finley-Brook & L. Holloman, 2016).

## **2. Conceptual Foundations**

Policies aimed at mitigating climate change have emerged as a prominent subject of debate in contemporary governance. Defined as "a set of decisions and actions undertaken by a government, to reduce greenhouse gas (GHG) emissions to mitigate climate change" (Finley-Brook & L. Holloman, 2016), climate policy encompasses a category of interlinked and often contested terms. Critics contend that the pursuit of climate policy is motivated by self-interest and is thus subject to manipulation by the wealthy. Such disparities in influence may exacerbate existing inequalities across various dimensions, including race, income, and geography. The overarching effort to

reduce fossil-fuel dependence through climate policy thus creates new dynamics of inequality on a global scale.

Policy measures designed to mitigate climate change may be adopted for reasons beyond the narrowly defined objectives of climate policy itself. The transition from fossil-fuel-dependent economies to more sustainable energy forms has the potential to support the achievement of various energy justice objectives across multiple scales. These goals include the equitable allocation of burdens and benefits, improved access to essential energy services, and conformity with standards of procedural fairness.

### **2.1. Climate Policy**

Climate policies are critical in limiting greenhouse gas emissions, but they differ greatly around the world. The term covers the full range of governmental efforts in both policy and regulatory areas to tackle climate change. Some nations, for instance, have implemented carbon taxes or emissions trading programs. In 2002, at the worst time in modern-day American history, the U.S. enacted a nationwide reduction program known as the Energy Independence and Security Act (EISA) to lower gasoline consumption and address energy supply and demand issues during a severe economic downturn that seriously damaged people's lifestyles. During a similar period, Japan introduced the Cool

Biz program, which encouraged workers to adopt a cooler dress code in summer and thus avoid using air conditioning unless necessary.

Climate policy is guided by various types of regulations, such as controlling GHG emissions, mandating vehicle fuel-economy standards, and restricting the use of certain chemicals. Financial subsidies for R&D. The foundation of the Montreal Protocol – widely acclaimed as one of the most effective treaties – inspired the creation of the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently the 1997 Kyoto Protocol, which determines commitments from both developed and developing countries for reducing GHG emissions. Again, many Asian countries intervene in energy production through prices, imports, and subsidies via State Oil Companies and other mechanisms. In drug RIA, for instance, the water resource factor is strictly considered by any manufacturing company seeking to obtain a patent or a subsequent patent. Other countries have adopted policies such as providing additional subsidies and introducing a so-called Whole Building Approach (Finley-Brook & L. Holloman, 2016).

## **2.2. Energy Justice**

The concept of energy justice builds on principles of justice and equity to illuminate systemic inequalities and support inclusive decision-making. Justice encompasses notions of fairness, equity, and morality, while equity addresses distributional fairness (Finley-Brook & L. Holloman, 2016). Energy is a critical resource in modern societies, vital for economic development, social well-being, and human flourishing. Sufficient and affordable energy production and consumption are essential to overall social welfare and equality; consequently, energy injustice adversely affects the well-being of certain groups and hinders progress toward equity and justice.

Energy-system decisions can therefore be characterised as just when they: (i) address the equitable distribution of energy-related benefits, burdens, and capabilities; (ii) give all people an adequate opportunity to participate in energy-related decision-making; and (iii) ensure respect for diverse energies, worldviews, and values in energy-system decisions. Specifically, the process of formulating climate policies and their associated implementation tools, such as subsidies, financing systems, tradable permit systems, and regulatory standards, ought to consider not only the environmental effectiveness of the proposed instruments but also

their implications for energy justice issues, thereby ensuring that climate efforts promote equity rather than exacerbating energy inequalities.

### **2.3. Democratic Institutions**

Democratic institutions enhance climate policy legitimacy and equity by facilitating inclusive dialogue, enabling accountability, and promoting subsidiarity. As custodians of energy justice principles, these institutions provide valuable guidance for just energy transitions and reinforce the foundation for broader social contracts (Finley-Brook & L. Holloman, 2016). Insufficient recognition of equity concerns can lead to public opposition, stemming from perceptions that policies disproportionately favour privileged groups (Mormann, 2019). Equity-oriented institutions emphasising deliberation, multi-tiered accountability, and local autonomy help secure and protect fair climate and energy policies (B. Eisen & Welton, 2019).

### **3. The Interplay Between Climate Policy and Energy Justice**

Climate change represents a profound challenge to equity and justice. Even with aggressive emissions reductions, its legacy will be felt for generations. The burdens of mitigation and adaptation have not been equitably shared, yet a vibrant climate movement has emerged

among disempowered groups excluded from planning, decision-making, and resource allocation processes. Climate justice, therefore, encompasses both the need to adopt sanctions that will radically reduce climate-altering activities and the need to adopt frameworks that will ensure the equitable distribution of the burdens of the resulting sanctions (Finley-Brook & L. Holloman, 2016). In addition to traditional climate justice concerns about burdens and benefits, recent dialogues have highlighted the need for energy justice, with the two themes seen as closely interconnected. A broadened, dual-framework perspective on climate and energy justice provides a richer understanding of climate-equity interactions and outlines a path toward improved climate responses in democratic contexts (B. Eisen & Welton, 2019).

#### **3.1. Allocation of Burdens and Benefits**

The Californian Government's climate commitments encompass both mitigation and adaptation action, although the intersection of climate, energy, and water justice remains unequally addressed. Climate change disproportionately impacts the most disadvantaged communities in California, as in many regions globally. Consequently, climate commitments also

necessitate active engagement with climate, energy, and water equity issues.

Policy benefits accrue unequally across society and must be acknowledged from the outset of any effort to identify an equitable approach (Savaresi & Bouwer, 2018). Key decisions fall into three distinct categories, albeit interlinked: the distribution of burdens and benefits arising from the climate-policy decisions among different societal groups; access to affordable energy services; and, finally, willing, effective, and fair participation in decision-making processes regarding policy design, implementation, and amendments (B. Eisen & Welton, 2019). Each group merits careful deliberation and analysis, both from an equity perspective and in practical terms for programme design and institutional accessibility.

Public policies to incrementally decarbonise energy systems have thus far taken centre stage in climate commitments and overall climate-mitigation agendas; however, these policies affect emissions- and non-emissions-related facets and conditions of energy access and energy poverty. The exploitation of fossil fuels as energy sources contributes to existing levels of sufficiency.

### **3.2. Access to Energy Services**

A dominant principle of energy justice focuses on the basic human right to access energy services, coupled with the urgent need to address the worldwide lack of electricity infrastructure. Many regions in Africa, India, and elsewhere experience blackouts lasting several hours every day due to limited generation capacity or weak distribution networks. In many poorer communities, people rely on solid fossil fuels for cooking, space heating, and refrigeration. The sale and use of these fuels pose significant hazards to human health, the environment, and the global climate. Since access to reliable energy services is essential for poverty reduction and the advancement of human well-being (Finley-Brook & L. Holloman, 2016), the case for action in this area is strong. In many jurisdictions, addressing procedural and affirmative energy injustice, in addition to access to physical energy services, has important equity implications for climate policy (Prehoda, 2016).

Justice demands that energy-related policy options and their implications be carefully scrutinised to ensure that historically disadvantaged communities—many of which are also among the most vulnerable to climate change—can articulate their concerns and participate in designing policies that affect them. Such equity issues arise in

the context of both climate change mitigation (e.g., the opportunity for residential adoption of renewable technologies, such as solar photovoltaic panels and storage) and adaptation (e.g., the climate vulnerability of living in substandard housing with inadequate energy services). Justice also requires that low-income households be explicitly considered in modelling the distributional implications of market-based mitigation instruments. Energy burdens are defined as the portion of household expenditures spent on energy services. They may be assessed for electricity, natural gas, heating oil, solid fuels, and other fuels, separately or in total.

### **3.3. Procedural Fairness and Participation**

It has frequently been argued that energy poverty must be tackled to address climate change and its effects while promoting distributional energy justice (B. Eisen & Welton, 2019). Addressing energy poverty is essential to securing equitable access to energy. However, a third dimension of energy justice is also urgent: procedural fairness. Various existing policies that generate greenhouse gas emissions disproportionately affect low-income communities. Addressing environmental rule-making processes is critical to achieving energy justice. The

repercussions of past energy policy decisions continue to be felt by many energy-disprivileged individuals. Reductions in fossil fuel subsidies will impose greater burdens on low-income communities, which are more reliant on fossil fuels to meet their energy demand than wealthier communities. Thus, energy poverty, procedural fairness, and the growing awareness of the need for an equitable energy transition require urgent attention from democratic institutions. Still, participation in energy-efficiency programs remains low in underserved communities because these programs are often complex and yield low rates of permanent energy savings (Okereke, 2017).

### **4. Democratic Institutions as Custodians of Equity**

Without intervention, climate change will impose disproportionate burdens and unequal access to energy services on the most vulnerable populations. Democratic institutions are uniquely positioned to advance the fair distribution of the burdens of the climate crisis and the implementation of corrective measures, as they can foster legitimacy through civil dialogue and promote representation through checks on concentrated power. Institutional designs must enable stakeholders to communicate collective interests and

align policy responses with pressing concerns.

Sufficient grounds exist to explore how democratic procedures balance climate policy with values of equity and justice. Legitimacy requires the ability to deliberate policies over time and adapt them to evolving scientific knowledge and social preferences. Accountability mechanisms ensure that vulnerable groups do not remain unrepresented indefinitely. Federal systems, in which both supranational and subnational authorities are engaged, help populations confront tensions arising from overlapping crises. Clear lines of responsibility facilitate public deliberation on climate policy accountability.

#### **4.1. Deliberative Democracy and Policy Legitimacy**

Increasing the legitimacy of climate policies is crucial for building broad public support and ensuring their sustainability over time. The kind of democratic institutions in place plays an important role by enabling or constraining public participation in policymaking and thereby shaping decision-making procedures. Empirical studies indicate that providing citizens with opportunities to deliberate on climate policy improves policy legitimacy and consequently the

acceptance of climate measures needed to achieve national decarbonization targets. Deliberative democratic mechanisms, such as climate assemblies or climate juries, which provide a representative group of affected citizens an opportunity to engage with decision-makers and other stakeholders on climate issues, thereby closing the divide between science and public debate and enhancing mutual understanding and support, are advocated as part of a broader effort to improve both climate governance and climate equity.

The way policies are designed and how decision-making processes unfold ultimately determine how burdens and benefits are shared, how access to energy services is granted, and how procedural fairness is upheld. Creating greater deliberative space with numerous opportunities for citizens and stakeholders to engage with decision-makers throughout the policy cycle, where information is exchanged and diverse perspectives discussed, is equally important for optimising equity in the distribution of concerns and benefits associated with climate policy.

The evidence indicates that climate policy tends to redistribute burdens and benefits in favour of the affluent, thereby exacerbating existing inequalities. Deliberative structures that feature such opportunities and the representation of

disadvantaged constituencies in political decision-making processes emerge as prominent means of advancing equity in the context of climate policy (Kaswan, 2018; Wells et al., 2021).

#### **4.2. Accountability Mechanisms**

The procedural equity of a polity's policy-making institutions matters for the design of just climate policies – this is true across location-specific governance arrangements. Both representative institutions and the democratic application of neoinstitutional theory shape policy effectiveness. Representative institutions create climate policies more closely aligned with energy justice when integrative accountability mechanisms enable those most affected by climate change and energy poverty to have a voice in shaping policy design. Effective climate policy must respond more robustly to the needs of affected communities than merely minimising aggregate expenditure on climate change. The democratic application of neoinstitutional theory clarifies conditions that support participatory climate and energy policy in different locations. Such needs can only be met where accountability mechanisms provide significant voice to the relevant interests in policy design.

A growing emphasis on equity in the design of climate policy is evident in calls

for a just transition, the fair distribution of responsibilities, and attention to energy poverty. These considerations are consistent with Riley Dunlap and Robert Brulle's 'structure of NIMBY-ism,' which holds that efforts to contain environmentally damaging development at the local level are more likely to be successful when the interests doing so have adequate representation across the relevant democratic institutions. The simple intuition carries through: climate policy should be designed to be responsive – more than simply a lowest common denominator that minimises societal expenditure towards climate targets – to the interests of the groups whose well-being (in) security issues motivate prevention.

#### **4.3. Federalism, Subsidiarity, and Local Autonomy**

Federalism and local autonomy are increasingly recognised as central to effective governance and climate action, particularly in systems founded on the principles of subsidiarity and local self-governance (Coinu & B. Lewis, 2019). Federal states are often better positioned than unitary states to invest, innovate, and implement policy solutions framed by both constitutional and public commitments to the principle of devolution. Federal systems are frequently more attentive to local priorities, with a greater diversity of

territorial units able to experiment with different solutions. Different sub-national levels of government, beginning with states or provinces and extending to municipal or local governments, can promote variety and adaptability, especially where differentiated yet interconnected approaches appear necessary.

### **5. Policy Instruments through an Equity Lens**

Climate policy is shaped by a multitude of instruments that influence its efficiency and distributional characteristics. These instruments impact the allocation of emissions allowances or the levying of natural resource rents, enabling an evaluation of their equity dimensions. Because these dimensions are well documented, they are not reiterated here. Nevertheless, a comparative analysis of these instruments through the lens of energy justice can further illuminate the trade-offs they entail among efficiency, effectiveness, and justice.

Policies that rely on market mechanisms have important distributional consequences because they leave the underlying configuration of rights and capacities untouched. These consequences, however, are often overlooked. For example, placing a price on carbon emissions or curtailing the extraction of fossil energy resources

typically invokes broad public support despite their potentially regressive nature. When 50 per cent of the population consumes 90 per cent of the energy, increasing energy prices raises related expenditures, thereby becoming detrimental to the already disadvantaged. A comprehensive energy justice analysis calls for a deeper examination of policy proposals to understand their broader implications. Climate policy must broaden its instruments beyond carbon pricing and resource extraction to include measures that provide compensatory, supportive, or augmenting benefits for sectors that naturally receive less positive redistribution or face an elevated burden.

Public investment and subsidisation typically aim to reduce the cost of energy services or to support the purchase of energy-related assets. Despite justifiable calls to scale up these investments beyond the energy nexus, the financing of green public investment funds often faces significant political resistance, undermining the effectiveness and credibility of proposed climate measures. Such investments remain, nevertheless, crucial and warrant careful attention to orient them toward positive distributive ends.

Regulatory measures that set binding standards influence both the price of energy services and the purchasing

capabilities of relevant acquisitions. Milestones that enable better energy service at a lower financial cost also help favour positive equity impacts. Universal service obligations and non-discrimination principles also feature prominently in public service policies to ensure the energy needs of the population at large are met. The broad range of regulatory tools available constitutes a key advantage of governance structures capable of implementing mechanisms that equally comprehensively commit to previous compensation objectives while yet broadly preserving coverage. (Mormann, 2019)

### **5.1. Market-Based Mechanisms and Distributional Impacts**

Universality, equity, affordability, and fairness are basic values that underlie energy justice and should therefore be reflected in climate policy. The large-scale deployment of market-based mechanisms for greenhouse gas emissions, also referred to as carbon pricing and carbon markets, illustrates a widespread departure from these equity principles, one driven by a neoclassical micro-economic paradigm that aims to achieve systemic efficiency while neglecting distributional considerations. These instruments can exacerbate inequalities within both industrialised and developing countries, undermine

the universal provision of electricity and other energy services, and contradict principles of social justice, as articulated in national constitutions, legislation, and environmental and energy policies; decision-makers in both contexts must be cognizant of these implications and regularly monitor their adverse effects (Kaswan, 2018).

### **5.2. Public Investment, Subsidies, and Affordability Programs**

Public investment in energy efficiency retrofits, clean distributed energy resources, and related technologies has emerged as a key element of state and local climate policy across North America. Climate policies that help finance energy efficiency upgrades and the installation of distributed renewables at residential and commercial properties can lead to improved energy affordability, enhanced health and well-being, and reduced emissions (B. Eisen & Welton, 2019). However, subsidies or rebates for clean technologies are often available only to individuals or businesses that can afford the upfront capital costs, whether directly or through financing options (Mormann, 2019). Without direct financial support for low-income households, funding for these provisions typically does not appear on residential customer bills. However, the rising cost of fossil fuels means these

households are spending more on energy than before.

In the clean energy transition, a variety of potential clean-energy-affordability programs need to be examined to support low- and moderate-income households. A longer-term, broader approach to customer-affordability programs—preferably linked with decarbonization—needs to be grounded in a climate-justice-centred framework to eliminate barriers to participation and reduce reliance on fossil fuels. Inactively addressing low-income energy customers increases their burdens during the clean-energy transition and diminishes their participation at every step of the regulatory process. Equitable, universal participation in climate policy decisions, design, and implementation ultimately leads to shared and prosperous outcomes.

### **5.3. Regulation, Standards, and Universal Service Obligations**

Regulation, standards, and universal service obligations play a crucial role in the quest for an equitable transition to clean energy. The design of regulation, standards, and universal service obligations in clean energy policy is closely intertwined with issues of equitable access and just implementation. A prevailing tendency toward top-down policymaking has

limited opportunities for stakeholder input, often at the expense of equity considerations. Participatory decision-making offers the promise of expanding support and addressing equity shortfalls in such scenarios. Furthermore, the arrival of a clean-energy transition marks a fundamental transformation of the global economy; no sector can afford to neglect the possible social and economic ramifications. As the New Era unfolds, equipment allocation and incentive design must, therefore, pay close attention to the constituencies served. Contributions from diverse voices across the spectrum make it easier to recognise and mitigate potential disadvantages, thereby improving the odds of achieving broadly useful outcomes (Mormann, 2019).

### **6. Case Studies in Democratic Contexts**

A large majority of climate mitigation policies (e.g., demand-side management, energy efficiency) are not expected to amplify present inequities. Policies to eliminate fossil fuel use are more likely to raise equity concerns. Policy-makers must therefore ascertain whether the frameworks applied to climate change should undergo modifications once fossil fuels are categorically excluded. A focus on equity questions surrounding fossil fuels can also direct attention to other energy policies that might jeopardise justice. Three policies of particular

relevance to fossils are examined, encompassing the electricity sector (market-based mechanisms), the building sector (subsidies), and energy in low-income communities (priority access). Reports emphasise the importance of establishing appropriate governance structures to ensure equity (Finley-Brook & L. Holloman, 2016).

As a matter of principle, climate legislation should uphold energy access and equity across the planning, implementation, and evaluation of climate-resilient investment policies. An illustrative question is whether disadvantaged communities can continue to access modern energy sources once they have first-time access. Evidence from countries across different development stages and continents reinforces the proposition that expanding access to infrastructure remains vital for communities already connected to electricity. In the absence of effective policies, climate change could undermine pre-existing efforts to secure energy access for vulnerable, disconnected populations (C. Stephens et al., 2018).

### **6.1. Urban Electrification and Justice in Practice**

Urban electric vehicle charging has emerged as a justice-oriented urban energy policy. Justice-oriented

frameworks characterise vehicle electrification as an urban energy service that must be accessible, secure, affordable, and available to all communities (B. Eisen & Welton, 2019). Vehicle electrification is both an energy and a climate policy, but distinct from electrification transitions for transportation, buildings, industry, and cooking. Climate packages emphasise vehicle electrification, but deployment decisions remain with traffic agencies that prioritise economically productive vehicles and privately owned cars. Community Choice Aggregation (CCA) debates involve existing member costs, but CCA does not address the energy justice dimensions of vehicle electrification.

International funding for energy access has resulted in widespread adoption of kitchen and agricultural stoves, but without regard for fuel choice, long-lived diesel generation, or energy justice considerations. In the United States, energy justice advocates raise concerns about electric mobile homes being denied access to charging in hot weather, where climate policy considerations intersect with justice dimensions of vehicle electrification.

### **6.2. Rural Energy Access and Political Representation**

Lack of political representation in rural areas is linked to insufficient energy access, significantly limiting electrification efforts. For instance, in some regions of Colombia and Ecuador, rural voters are rarely consulted on infrastructure investment plans, including electricity. This situation reflects a general disregard for rural citizens' opinions: local politicians are elected in municipalities where candidates' names have already been removed from ballots following nationally televised debates. Remote municipalities receive few government resources, leading regional authorities to prioritise urban over rural concerns, as urban land holds greater economic value (Finley-Brook & L. Holloman, 2016).

When political engagement is limited, energy may not be prioritised as an essential social service. A case study emphasises that regulatory obstacles in Colombia hamper public policies that support the expansion of energy access, including public-service electricity subsidies for rural households. The absence of access to electricity and political representation is part of a broader trend: rural municipalities are often excluded from national consultations on climate policies (Mormann, 2019).

### **6.3. Transitional Supports for Fossil-Dependence Communities**

Fossil-fuel extraction and processing are often major economic activities and sources of employment for communities in low-income regions of Canada, contributing to local well-being (Finley-Brook & L. Holloman, 2016). For example, nearly 12% of GDP in Canada's Newfoundland and Labrador province comes from fossil-fuel extraction, with exports generating significant revenue (Green & Gambhir, 2019). Transitioning away from fossil fuels can adversely affect those who rely on fossil fuel development when climate policies are introduced to reduce energy use. These adverse effects may not fall evenly across regions and social groups, undermining energy-justice goals. Consequently, transitional supports that sustain well-being and livelihoods without further extending carbon lock-in could promote justice and legitimacy during energy transitions.

### **7. Institutional Reform for Energy Justice**

Energy justice continues to gain traction as the political narrative surrounding climate action evolves. Framing climate policies in terms of fairness and equity has been found to reduce resistance and increase engagement (Finley-Brook & L. Holloman, 2016). There is a powerful synergy between climate policy, energy justice, and democratic governance. First, climate policies often impose widely

variable burdens and confer uneven benefits. Second, access to modern energy services is frequently inequitable. Third, energy policies must be widely perceived as fair and incorporate significant public input to build legitimacy. Democratic institutions are ideally suited to preserve a broad interpretation of equity, promote fair distribution of benefits and burdens, and ensure access to energy services. Procedures that improve deliberation, accountability, and local autonomy can address the existing climate-energy-justice gap (B. Eisen & Welton, 2019).

Wide-ranging institutional reforms for energy justice could promote better climate policy—a win-win scenario. Climate policies rarely centre on energy justice, despite clear interconnections. Democratic characteristics intersect with energy justice in three dimensions. Meaningful deliberation enhances policy solutions and mitigates backlash, promoting equitable distribution of climate burdens. Selective accountability mechanisms check processes that poorly balance climate and energy objectives. Federalism, subsidiarity, and local autonomy nurture long-term community navigation of climate dilemmas, reinforcing energy-service dimensions of sustainability.

### **7.1. Participatory Budgeting and Deliberation Platforms**

Participatory budgeting (PB) and deliberation platforms (DP) empower citizens to influence public expenditure decisions. This decentralised approach aligns with participatory principles by involving residents in shaping policies that directly affect them. Evidence indicates that PB enhances democratic legitimacy and may lead to policies that better address citizens' needs (Yu, 2019). When implemented creatively and thoughtfully, PB and DP have the potential to reinforce equity in climate policy.

Over 430 cities worldwide use PB templates. The City of Paris allocates 10 million euros annually to programs proposed by residents and selected through public vote. Participants submit distinct project proposals, grouped into thematic categories, leaving pre-defined funding ceilings. Citizens thus influence which programs receive funding. Similar PB systems operate in municipalities such as Belo Horizonte and Porto Alegre (Brazil), Incheon (Republic of Korea), Madrid (Spain), Montevideo (Uruguay), New York City, and São Paulo (Brazil) (Wampler & Hartz-Karp, 2012).

London allocated a portion of its climate policy funding through a PB initiative. A committee curates a project shortlist based on criteria such as alignment with climate goals and environmental justice.

London residents vote on which projects to prioritise.

## **7.2. Independent Regulators and Transparent Metrics**

Independent regulators governing energy markets, along with transparent equity metrics that identify winners and losers from climate policies, can help ensure that climate policies pursued by democracies do not exacerbate existing inequities. Independent regulators can create space in the policy-making process for stakeholders outside powerful incumbent interests. In California, the California Public Utilities Commission was established in the late 1800s to prevent the capture of energy utilities by monopolies and to “ensure that the services provided by these private monopolies, including energy, are accessible and affordable—for everyone.” Cultivating institutions and processes that facilitate participation in setting such equity metrics could strengthen trust in decision-making as a whole, given the wide-ranging uncertainties and complexities involved in arriving at even a baseline notion of equity and estimating the equity impacts of various policies (Kaswan, 2018). As policies and technologies evolve, participatory frameworks can provide a mechanism to continuously refine equity metrics to reflect changing circumstances and social expectations.

## **7.3. Data Governance and Monitoring of Equity Outcomes**

Governments must establish data governance processes that protect personal information and promote visibility and accountability on distributional outcomes from climate policy. These systems can illuminate equity-relevant dimensions, such as access, affordability, and health impacts. Climate measures are important for protecting health, equality, and well-being (Finley-Brook & L. Holloman, 2016). Better governance ensures analysis of how policies affect differing social groups. Interventions should not exacerbate long-standing inequalities or create new ones (Mormann, 2019). Independent, empowered regulatory bodies can promote equity by monitoring and disseminating the effects of climate policies. Publicly available indicators facilitate experimentation with and evaluation of climate policies on distributional and procedural equity.

Climate policies often have major equity implications for regions and communities, influencing public acceptance and the ability and willingness to participate in the energy transition. Widely used indicators of energy access and services can inform the timing of investments in renewable generation, networks, or storage to improve availability and prevent

exclusion. At-risk groups include low-income households, informal settlements, and other marginalised populations. Analysis of energy access and affordability is strengthened by monitoring pre-existing policies, such as electricity access targets, and the space for international cooperation in settings with high levels of energy poverty. Balancing equity and decarbonisation can help maintain support for energy transitions.

## **8. Global Perspectives and Lessons for Democracies**

Climate change poses a challenge to democracy as a broad concept because the cumulative nature of emissions and their impact on a changing environment impose limits on representation over long-term planning horizons (Di Paola & Jamieson, 2018). Democracy is about representation at its core, and climate change pre-empts the question of representation over the use of the atmosphere, with some countries, especially developing ones, raising the question of whether they are to be represented at all. Furthermore, democratic representation is fundamentally local, and the challenge of atmospheric equilibrium extends beyond local representation to a global scale. Regarding international cooperation, informing and enabling citizens in the context of climate change is imperative

for democracies now. The knowledge and expertise to act on climate change are there, but the challenge is to create the political support for action, and that support is invariably local (Kaswan, 2018).

### **8.1. Comparative Institutional Arrangements**

The challenge of climate change increasingly drives policy evaluation at the national and political level (Kaswan, 2018). Given the inequitable distribution of both climate policy burdens and fossil fuel production benefits along social and demographic lines, the relationship between climate policy objectives and energy justice assumes both policy and ethical significance (B. Eisen & Welton, 2019). Achieving an adequate climate solution requires halting the continued increase in greenhouse gas emissions, yet justice dictates that fossil-fuel-dependent communities be supported through the transition. Widespread electrification remains a dominant climate strategy, yet its expansion also entails a corresponding increase in dependence on critical minerals (Finley-Brook & L. Holloman, 2016). Hence, it remains crucial to adopt policies that address the inequitable distribution of energy policy burdens and benefits. This aspect also bears on the normative question of climate justice, which is further

strengthened when climate and energy policy are considered in tandem.

Several institutional factors influence the capacity of democratic states to pair efforts to meet climate targets with a commitment to energy justice at different scales. Institutional arrangements fall along both a public-private continuum and a global-national-local continuum, both of which affect the institutional capacity to orchestrate climate and energy policy. Whether national policy can adequately represent local or sectoral injustices, or whether the multilevel global framework can accommodate national-emission statements at all, hinges on these institutional dimensions. Additional institutional configurations also shape both the relative weighting of climate and energy targets and the transparency and inclusion with which inequities in burden sharing are exposed and compensated.

## **8.2. International Cooperation and Domestic Accountability**

As the dangers of climate change mount, international cooperation is critical. Climate change affects the economies, habitats, and livelihoods of people around the world. Climate agreements and policies are insufficient when just a few states make ambitious commitments. Instead, all members of a society must participate in an inclusive, transparent,

and legitimate democratic process of collective decision-making, thereby ensuring that everyone's interests, especially those of disenfranchised groups, are protected.

The distribution of burdens and benefits of renewable energy transitions is dependent on the specific energy and climate policies implemented and can benefit greatly from the support of democratic institutions. Energy-efficiency investments, affordability programs, public transit supports, and mobility investments benefit both low-income and low-energy-demand individuals. Poor, marginalised, and vulnerable communities are typically located near pollution sources, where small-scale distributed energy generation becomes an important strategy (Scobie, 2016). Helping marginalised groups during energy transitions frees them from existing pressures and enables other forms of participation, such as stakeholder dialogue.

## **9. Policy Recommendations for Democratic Alignment with Energy Justice**

Climate change threatens the natural and human systems that undergird life on Earth and scar the future. The world must limit global warming to below 2 degrees Celsius above pre-industrial

levels, which requires international reductions in greenhouse gas (GHG) emissions. The need for rapid, deep emissions cuts has led to both calls for and long-established campaigns of resistance from numerous Web publics, councils, policy think tanks and new civil-society movements, such as Extinction Rebellion and Fridays for Future. Calls for collective, inclusive and equitable climate action have become ever more frequent and urgent. In particular, they arise from and are directed toward those most vulnerable to the effects of the climate crisis, often from the Global South. Within institutional-rich democracies, these popular calls intersect with forms of energy justice that are deeply interlinked with—but distinct from—climate justice (Prehoda, 2016). Climate policy must equally observe energy justice—if it is to remain, in all its forms, aligned with established democracies. Climate policy that does not effectuate deep decarbonisation also escapes attention. Climate justice fully translates the rationale behind equity-driven collective action into policy design implications. In contrast, energy justice, similarly equity-driven but focused on one highly consequential and widely operationalised domain, provides a parallel, compact lens through which the challenge of equitable climate policy-dyad design can be precisely and penetratively elaborated.

The broad objective of climate policy retained within well-functioning democracies extends far beyond mere GHG reductions. It embraces the transformation of various socio-economic systems to align them in respectful ways, in which the entire institutional architecture upholds alternative rationales for supportive political economy action. Climate policy interacts with energy justice on three fundamental dimensions: i) the distribution of burdens and benefits, ii) the broad availability of access to energy, an essential precondition of economic activities, and iii) procedural fairness in its many forms and junctions.

### **9.1. Design Principles for Inclusive Climate.Policy**

In an era of mounting climate risks and socio-environmental injustices, climate policy formulation must be compatible with energy justice. According to the US Energy Information Administration, around 44 million residential customers (14%) experienced energy insecurity in 2020, many of them from disadvantaged communities (Mormann, 2019). There remains, therefore, a palpable impetus to draw lessons from worldwide experience, especially in fully democratic jurisdictions, on the interplay between climate policy and energy justice, emphasising the need to include the urban and rural poor in decision-making

to enhance policy legitimacy. Climate policies to achieve net-zero carbon emissions often fail to account for the energy predicament faced by low-income and marginalised communities that depend on fossil fuels, whether for on-site energy or as energy carriers such as coal or oil. Building eligibility on renewable energy technologies, a design still prevalent in many countries, overlooks energy governance under climate transition and requires adjustment.

Independent of climate-related debates, energy injustice can emerge around the design and implementation of energy policies. In the most severe global cases, even energy access, a prerequisite for welfare provision, is unachievable. Policy options often supported by central authorities—namely, the allocation of urban electrification subsidies, rural electrification investments across the peri-urban fringe, and transitional assistance for stranding coal mines and fumigation—successfully enhance the urban poor's access to crucial energy services under democracy. The inclusion of human rights, environmental democracy, information freedom, and anti-corruption as pillars of the 2030 Agenda for Sustainable Development, under the auspices of the United Nations, may facilitate a reconfiguration of national policy priorities upward.

Drawing on the experience of climate and energy policy design in fully democratic countries and further supported by adoption of energy justice as the major equity framework, a threefold design principle is proposed to promote climate policy alignment with the objectives of energy justice: public deliberation to establish collective priorities among multiple competing claims, extension of the policy umbrella to cover energy services that essential to concerned constituencies, and enhanced distributional transparency to ensure equity through accountability (Finley-Brook & L. Holloman, 2016).

## **9.2. Governance Reforms to Strengthen Democratic Oversight**

Energy transitions typically entail manifold, often severe trade-offs among competing values, and the situation in the energy sector is no exception (Kaswan, 2018). Comparative perspectives where energy and climate (hence, technology) policies migrate from one political and administrative system to another attract attention in all democracies. A broad array of needs—including democratic institutions that uphold voting rights, that satisfy the conditions of genuine pluralism, that facilitate equally distributed “voice” in the policy-making processes, and that guarantee a selected subset of agencies participate in those processes—continues

to exist (Menno Ottens & Jurian Edelenbos, 2018). Observers have reached the consensus that the central tenets of “justice” are associated with—among many others—“reciprocity,” “solidarity,” “merit,” “benefit” and “capacity of contribution” within the OECD realm, leading to the construction of the “just energy” approach that couples climate and energy systems by building welfare functions of energy justice across the lifecycle of the system.

### **9.3. Metrics, Evaluation, and Continuous Improvement**

Just as metrics are essential at the commencement of a climate policy or energy transition initiative, they remain vital during its implementation (Howard, 2018). They provide a means to establish progress, thereby facilitating real-time adjustments to optimise delivery. The development of sound metrics should occur in conjunction with public monitoring, similar to crowdfunding campaigns. When supported by open transparency, this public visibility enables individuals to note patterns of advancement and/or stagnation (Mormann, 2019). Adoption of a metric-based evaluation framework facilitates understanding of equity gains and losses associated with the myriad decisions inherent in climate policy design and implementation, thereby promoting a consistent, measurable

focus on energy justice across the routine processes of other sectors. Equity, fundamentally a political question, is nonetheless amenable to quantification, providing opportunities to understand and track distributional effects linked with policy changes, investments, regulatory undertakings, procurement activities, and various programmes across several branches of government, including energy, environment, transportation, economic development, and housing.

### **10. Conclusion**

Reducing greenhouse gas emissions to avert catastrophic climate change while ensuring equitable access to affordable, reliable, and clean energy services is one of the most pressing challenges of our time. Achieving these interlinked goals—climate policy and energy justice—requires effective democratic institutions capable of addressing them simultaneously. Evidence shows that equity-enhancing climate policies are more effective at achieving decarbonization targets than regressive ones. However, inequitable energy policies and broader democratic deficits persist worldwide, hampering climate ambitions. To facilitate climate policy aligned with energy justice and strengthen democratic institutions, democratic governments should adopt the following strategies: articulate

climate policy design principles that ensure equitable access to affordable energy services; implement governance reforms that enhance the democratic legitimacy of climate policy; and introduce metrics for monitoring the equity impacts of climate actions, evaluate progress within an equity framework, and adjust measures accordingly (Kaswan, 2018) ; (Mormann, 2019).

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