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Abstract

The current work examines the role of behavioural and psychology science in the design and implementation of climate policies. By synthesizing evidence from diverse disciplines, we develop an analytic framework to assess how behavioural and psychological insights can close the intention-action gap and enhance policy effectiveness. Drawing from recent studies on psychological adaptation, social norms, and policy instrument design, we argue that integrated, context-sensitive behavioural strategies can facilitate large-scale sustainable transformation. The paper emphasizes the limitations of current behavioural approaches and proposes robust, interdisciplinary policy architectures aimed at fostering equity, engagement, and long-term impact.

Keywords: Behavioural science; climate policy; psychological adaptation; public engagement.

JEL Codes: A14; I30; Q00; Q51; Q56; Q59.

1. Introduction: The Behavioural Gap in Climate Policy

Despite increasing scientific urgency, behavioural resistance and political missteps have constrained the effectiveness of global climate action. Empirical data show that while public concern about climate change is high, this concern does not consistently translate into action (Jenny *et al.*, 2022). This gap reflects not only informational deficits but also psychological, social, and structural barriers (Gkargkavouzi *et al.*, 2019a). Behavioural science and environmental psychology as disciplines that examine human decision-making in context, offer neglected yet essential tools for improving climate policy adoption and compliance (Norton *et al.*, 2017; Iwińska *et al.*, 2023).

The complexity of climate change requires more than technical solutions. It demands behavioural transformation at individual, institutional, and systemic levels. However, current policy mechanisms often underutilize the behavioural insights that could drive this transformation (Van Der Linden *et al.*, 2021; Mitev et al., 2023). The current work aims to provide a critical view on behavioural and psychological insights in climate policy by synthesizing literature on current effective interventions and elaborating on their contribution. It concludes with tailored policy recommendations for consideration.

2. Theoretical Foundations

2.1. Determinants of Climate-Relevant Behaviour

Understanding the behavioural dynamics underpinning climate action requires a robust conceptual framework. Five core psychological drivers, namely risk perception, trust in institutions, perceived self-efficacy, social norms, and biosphere value orientation, repeatedly emerge in empirical studies (Clayton *et al.*, 2015; Jenny *et al.*, 2022). Risk perception enhances engagement when threats are seen as immediate and personally relevant; people act more decisively when the impacts of climate change are framed in local, visible, and tangible terms (Singh et al., 2017).

Institutional trust correlates with policy compliance and support for regulation, fostering acceptance especially when decisions are perceived as fair and evidence-based (Bonfanti *et al*., 2024). Self-efficacy influences individuals' belief in their capacity to make a difference, with empowering policies demonstrating greater efficacy than restrictive ones (Bechtoldt *et al.*, 2020). Social norms shape acceptable behaviours in organizational and community settings, influencing action both directly and by reinforcing perceived expectations from others (Yoeli *et al.*, 2017).

Finally, value orientation and especially biosphere concern predicts pro-environmental commitment (Iwińska *et al.*, 2023). Organizational constructs such as "green psychological climate" mediate how collective values influence individual actions (Norton et al., 2017). These factors create opportunities for targeted intervention. Furthermore, the development of a green identity can serve as a long-term predictor of climate-consistent behaviours (Bradley *et al.*, 2020).

2.2. From Attitudes to Action: Explaining Behavioural Inconsistencies

Behavioural theories often assume that knowledge or concerns are translated into action (Halkos and Galani, 2016; Halkos *et al.*, 2022). However, the persistent intention-behaviour gap, where individuals are aware and concerned about climate change but fail to adopt sustainable behaviours, challenges this assumption (Hall *et al.*, 2018). This inconsistency is driven by several cognitive and contextual mechanisms. Temporal discounting, for instance, weakens motivation when the benefits of climate action are perceived as distant or delayed. Similarly, perceived behavioural costs, whether in terms of time, effort or financial resources discourage individuals from making environmentally conscious choices. Psychological distance or feeling climate change abstract or geographically remote further diminishes the sense of urgency (Singh *et al.*, 2017). Yet, normative aversion arises when pro-environmental behaviour is neither clearly encouraged nor socially rewarded, undermining motivation to act.

To close this gap, interventions must address these cognitive and motivational barriers directly. Strategies such as future-self-perception (Vlasceanu *et al.*, 2024), emotionally resonant storytelling, and immersive, interactive experiences have shown promise in reducing psychological distance and enhancing both engagement and support for climate policies. By making the consequences of inaction feel immediate and personally relevant, these approaches can bridge the divide between belief and behaviour, fostering more consistent and impact climate action.

2.3. Behavioural Policy Tools: Evidence and Limitations

Behavioural interventions aimed at promoting climate-friendly actions generally fall into several categories, including nudges and choice architecture (such as defaulting individuals into green options), framing and messaging strategies that emphasize co-benefits or potential gains, goal setting combined with feedback mechanisms, and the activation of social norms through comparison with peers. Meta-analyses have shown that

these tools yield small but statistically significant effects, particularly when directed at low-cost, low-effort behaviours like reducing household energy use or choosing sustainable products (Nisa *et al.*, 2019; Vlasceanu *et al.*, 2024).

However, these interventions are not without limitations. Much of the existing evidence base reflects short-term outcomes, with limited understanding of long-term behavioural maintenance. Additionally, questions of scalability persist, as interventions that are effective in one cultural or demographic context may not translate well to others, raising concerns about generalizability (Berger *et al.*, 2024). Ethical considerations also come into play, especially when nudges are perceived as covert or manipulative, potentially undermining trust and autonomy.

Despite these challenges, several behavioural tools have demonstrated notable success in real-world settings. Peer comparison reports have encouraged energy conservation by highlighting how an individual's usage compares to that of neighbours (Yoeli *et al.*, 2017). In organizational contexts, goal-setting initiatives have contributed to measurable improvements in corporate sustainability performance (Das *et al.*, 2019). Community-level interventions that publicly recognize environmental achievements such as recycling milestones or collective reductions in energy use, have also proven effective in reinforcing positive norms and sustaining engagement (Bastini *et al.*, 2023). Moving forward, the integration of behavioural tools with structural policy measures, along with attention to cultural sensitivity and ethical transparency, is essential in enhancing their effectiveness and legitimacy.

2.4. Psychological Adaptation and Public Engagement

Psychological adaptation refers to the emotional and cognitive processes individuals use to cope with and respond to climate-related stressors. It encompasses a range of mechanisms, including how people appraise and emotionally address climate risks (Reser & Swim, 2011), their sense of self-efficacy and belief in the effectiveness of their actions (Bechtoldt *et al.*, 2020), and the influence of social trust and cultural norms on how climate information is interpreted and acted upon (Bonfanti *et al.*, 2024). Emotional regulation strategies like reframing narratives to focus on agency rather than helplessness, and drawing on social support networks, also play a crucial role in fostering psychological resilience (Spătaru *et al.*, 2024).

When thoughtfully integrated into policy design, these psychological mechanisms can significantly enhance public receptivity to climate adaptation measures and strengthen

community resilience. For instance, communicating the local and immediate impacts of climate change can reduce psychological distance, increase the sense of relevance and urgency and motivate more proactive responses (Rana *et al.*, 2023). Additionally, embedding psychological adaptation support into climate adaptation frameworks can help address rising levels of eco-anxiety, particularly among young people and other vulnerable populations who may feel overwhelmed or powerless in the face of climate challenges (Heath, 2025).

Incorporating these insights also facilitates a shift from reactive to proactive adaptation, encouraging not just coping, but engagement, planning, and empowerment. Policies that promote community dialogue, emotional literacy, and inclusive participation can create spaces where people feel heard, supported, and equipped to face an uncertain climate future.

2.5. Policy Architecture: Combining Behavioural and Structural Instruments

The most effective climate policy frameworks integrate both behavioural and structural instruments to create a mutually reinforcing system of change. Financial incentives and subsidies, for example, can amplify the impact of behavioural nudges by making pro-environmental choices not only psychologically appealing but also economically rational (Andor & Fels, 2018). Regulatory tools, such as emissions standards or building codes, serve a dual function: they establish clear boundaries for acceptable behaviour and send strong social signals that reshape norms and expectations within markets and communities (Gowdy, 2008). While information provision on its own often produces limited behavioural shifts, it plays a critical supporting role by enhancing transparency, building awareness, and laying the cognitive groundwork for more substantial interventions (De Vries, 2020).

An increasingly prominent approach is the use of policy instrument mixes, strategically crafted combinations of push (regulatory), pull (incentive-based), and informational measures designed to match varying levels of behavioural readiness across populations (Ejelöv *et al.*, 2022). These mixes acknowledge that no single tool is sufficient on its own and that effective policy must address both external conditions and internal motivators. For instance, a carbon tax might be paired with public education campaigns, targeted subsidies for energy-efficient appliances, and default enrolment in green energy programs, creating multiple points of engagement that reinforce each other.

Policies must be dynamic and responsive to shifting social, technological, and environmental contexts. Adaptive policy design, incorporating mechanisms for feedback, experimentation, and iterative learning, is essential for maintaining effectiveness over time and across diverse communities (Capano & Howlett, 2020). This flexibility allows policymakers to adjust instrument mixes based on real-world outcomes, behavioural insights, and stakeholder input, ensuring that interventions remain relevant, equitable, and impact in the face of evolving climate challenges.

2.6. Equity, Trust, and Psychological Resilience

Policy effectiveness in the climate domain is deeply influenced by perceptions of equity and the degree of trust within communities. Behavioural science consistently shows that when policies are regarded as equitable and fair, public compliance and support increase, particularly among marginalized or underserved groups (Heath, 2025). Beyond compliance, such perceptions also influence the deeper psychological dynamics that shape long-term engagement. Psychological resilience, bolstered by factors such as social support networks, community adaptability, and institutional trust, plays a vital role in buffering individuals and communities against climate-related anxiety and uncertainty. This resilience, in turn, fosters more proactive and sustained behavioural responses to environmental threats (Nicolas *et al.*, 2019; Spătaru *et al.,* 2024), driving also corporate social responsibility (Halkos and Nomikos, 2021).

For climate policies to be both effective and ethically grounded, they must be designed with a strong sensitivity to equity. This involves more than just distributing resources fairly; it requires involving communities directly in the co-design of interventions, ensuring that their knowledge, values, and lived experiences shape the policy process from the outset. Communication strategies should be culturally tailored, using frames and narratives that resonate with diverse populations rather than relying on one-size-fits-all messaging. Equally important is the integration of mental health and psychosocial well-being into policy frameworks, recognizing that climate impacts are not just physical or economic but deeply emotional and psychological.

Addressing historical injustices and acknowledging existing power asymmetries is also essential. Many communities, especially in the Global South, face constrained adaptive capacities due to legacies of colonization, structural inequality, and underinvestment. Policies that fail to recognize these contexts risk appearing insensitive or unfair, potentially

triggering backlash, distrust, and even policy failure (Ulibarri *et al.*, 2022). In contrast, equity-centred approaches can build social cohesion, enhance the legitimacy of climate governance, and unlock more inclusive pathways to adaptation and mitigation. In the long run, embedding justice into the core of climate policy is not only a moral imperative but a strategic necessity for building durable, collective responses to a rapidly changing world.

3. Advancing Policy

3.1. Toward a Behavioural Policy Framework for Climate Governance

Building on insights from the interdisciplinary literature, we propose an integrative framework for behavioural climate governance that organizes the psychological and policy dimensions of climate action into three interrelated layers.

At the foundational level, key individual-level determinants such as risk perception, biosphere value orientation, and perceived self-efficacy serve as the cognitive and motivational foundation for pro-environmental behaviour. These factors determine how individuals understand climate threats, prioritize environmental concerns, and assess their capacity to contribute meaningfully to mitigation or adaptation efforts. The psychosocial processes that translate preferences and beliefs into behavioural engagement further includes the formation of a green identity, the internalization of social norms, and the development of psychological adaptation mechanisms such as emotional regulation, coping strategies, and resilience in the face of climate stressors. Together, these factors facilitate behavioural consistency and protect against disengagement, particularly under conditions of uncertainty or adversity.

Policy operationalizes these behavioural insights through a coherent mix of interventions that align behavioural tools like nudges, feedback mechanisms, and social norm activation, with broader structural instruments, including regulatory mandates, financial incentives, and educational campaigns. The aim is to create a synergistic policy environment where individual motivation and systemic support reinforce one another. The effectiveness of this multi-layered framework depends on rigorous, ongoing evaluation. Policymakers must invest in real-time impact assessments and embrace adaptive governance through iterative experimentation (Biresselioglu & Demir, 2024; Nielsen *et al.*, 2024).

Methodologically robust approaches such as randomized controlled trials, behavioural simulations, and longitudinal studies are essential for determining which interventions work, for which populations, and under what contextual conditions. Such

Evidence-based feedback mechanisms are essential for enhancing behavioural strategies, ensuring accountability, and enhancing the scalability and legitimacy of climate governance. Table 1 provides an overview for policymakers and researchers of the behavioural and psychological tools used in climate policy and it synthesizes behavioural approaches, including their mechanisms, examples, and sources.

3.2. Policy Recommendations

Based on a literature synthesis, we conclude to 8 main policy recommendations to advance the effectiveness and inclusiveness of climate policy by incorporating behavioural insights. First, there is urgency for embed behavioural insights across policy cycles, not as add-ons but as core design principles. Behavioural science should not be treated as an auxiliary tool but rather as a core element embedded throughout all stages of the policy process, from problem identification to implementation and evaluation. Integrating insights on decision-making, motivation, and perception can improve the design and uptake of climate policies (Biresselioglu & Demir, 2024). Considering these insights early improves relevance, responsiveness, and public acceptance, especially when policies are incremental and feedback-driven (Capano & Howlett, 2020).

Second, interventions should focus on high-impact leverage fields, such as transportation and housing. Targeting sectors that are both carbon-intensive and behaviourally sensitive (for instance, transportation and housing) can yield disproportionately large environmental benefits. These domains are strongly influenced by habits, default choices or habits, and infrastructural constraints, thus, they should be prioritized for integrated behavioural and structural changes (Andor & Fels, 2018). Well-designed interventions in these areas can trigger positive spill over effects, reinforcing sustainable action in other life domains (Nisa et al., 2019).

Third, any policy initiative should support local engagement and co-design, ensuring legitimacy and trust. Policy effectiveness and legitimacy are greatly enhanced when communities are involved in the co-design of interventions. Co-creation fosters procedural justice and builds social trusts, which are critical for policy compliance and long-term engagement (Heath, 2025; Bonfanti *et al*., 2024). Local participation also ensures that cultural values, local knowledge, and contextual constraints are integrated into solutions, thereby increasing the relevance and durability of policy outcomes (Ulibarri et al., 2022).

Table 1. Behavioural and psychological tools used in climate policy

Behavioural Tool	**Description**	**Example Use Cases**	**Key References**
Nudges & Choice Architecture	Alters default options to favour sustainable behaviour	Default green energy subscriptions	Howlett & Rawat (2019); Nisa *et al*. (2019)
Framing & Messaging	Presents information to highlight gains, urgency, or personal relevance	Communicating local climate benefits of action	Van Der Linden *et al*. (2015); Singhetal. (2017)
Goal Setting	Encourages personal or organizational environmental targets	Corporate sustainability pledges	Das *et al*. (2019); Norton *et al*. (2017)
Social Norm Activation	Uses group behaviour as a benchmark to guide individual choices	Peer energy reports, recycling feedback	Yoeli *et al*. (2017); Bastini *et al*. (2023)
Feedback	Provides information on performance relative to a goal or others	Household energy monitoring	Bergquist *et al*. (2023); Yoeli *et al.* (2017)
Psychological Adaptation	Enhances resilience through self-efficacy, coping, and engagement	Community-based climate resilience programs	Bechtoldt *et al*. (2020); Reser & Swim (2011)
Risk Perception	Highlights proximity and severity of climate risks	Mapping flood-prone areas, using real-life testimonials	Clayton *et al*. (2015); Singh et al. (2017)
Green Identity	Builds internalized environmental self-concept	Green labelling, employee engagement in sustainability roles	Bradley et al. (2020); Norton *et al*. (2017)
Experiential Engagement	Encourages hands-on or emotional climate experiences	Climate simulation games, participatory workshops	Van Der Linden *et al*. (2015); Huetal. (2022)
Financial Incentives	Uses monetary rewards or disincentives to promote sustainable choices	Rebates for electric vehicles, congestion pricing	Bergquist *et al*. (2023); Andor & Fels (2018)
Information Provision	Delivers factual, actionable knowledge on climate impacts and solutions	Fact sheets on emissions reduction strategies	Yoeli *et al.* (2017); De Vries (2020)
Social Learning	Promotes behaviour through observation and interaction in communities	Peer-led workshops, cooperative environmental programs	Das *et al*. (2019); Ejelöv *et al.* (2022)
Default Rules	Pre-sets environmentally preferable options in choice environments	Automatic enrolment in carbon offset programs	Howlett & Rawat (2019); Nisa *et al.* (2019)
Consideration of Future Consequences	Encourages thinking about long-term impacts of actions	Letters to future generations, intergenerational justice framing	Beiser-McGrath & Huber (2018); Vlasceanu *et al.* (2024)

Note. This table summarizes the key behavioural approaches referenced throughout the paper, including their mechanisms, examples, and sources. It serves as a reference for policymakers and researchers designing multi-dimensional strategies for climate action.

Also, it is of high importance to strengthen interdisciplinary research, bridging psychology, economics, and political science. Addressing the complexity of climate behaviour requires an integrative research approach that combines the psychological underpinnings of individual action with structural insights from economics and the institutional dynamics explored in political science. This interdisciplinary synthesis can support the development of more comprehensive policy instrument mixes tailored to diverse behavioural profiles and governance contexts (Ejelöv *et al.*, 2022; Nielsen *et al.*, 2024).

Moreover, evidence showcases the need to invest in longitudinal studies, particularly on adaptation, spill over effects, and equity. Most behavioural interventions are evaluated through short-term studies, limiting understanding of their durability and broader social consequences. Longitudinal research is essential for tracking sustained behaviour change, psychological adaptation, behavioural spill over across contexts, and the equity implications of climate interventions over time (Spătaru *et al.,* 2024; Nicolas *et al.*, 2019). This is particularly urgent in the context of rising eco-anxiety and the need to ensure that adaptation strategies are inclusive and just (Heath, 2025).

Additionally, it is essential to develop participatory governance structures to build long lasting support and adaptive capacity. Inclusive governance mechanisms that allow for deliberation, negotiation, and shared decision-making can increase the perceived legitimacy of climate policies and foster collective ownership (Capano & Howlett, 2020). Participatory structures also serve as platforms for building adaptive capacity by enabling communities to respond flexibly to evolving environmental, technological, and social conditions (Ulibarri *et al*., 2022).

Another critical issue is the use behavioural segmentation, tailoring interventions to distinct groups based on psychological profiles. People vary significantly in their motivations, values, and perceived barriers to action (Gkargkavouzi *et al.*, 2019b). Segmenting the population into meaningful behavioural profiles, including those high in biosphere concern, low in self-efficacy, or influenced by social norms, can help tailor interventions for greater precision and impact (Bechtoldt *et al.*, 2020; Jenny *et al.*, 2022). Such segmentation enables more efficient allocation of resources and enhances the behavioural relevance of policy messages. Finally, policy design must consider integrating digital technologies, like apps and gamification, to support sustainable behaviour change.

Table 2. Policy interventions by context

Policy Relevance	Intervention Type	References
Mitigation	Behavioral Interventions	Andor & Fels (2018); Bastini *et al*. (2023); Nisa *et al*. (2019); Nielsen *et al*. (2024); Stern (2020); Vlasceanu *et al*. (2024); Berger *et al*. (2024); Biresselioglu & Demir (2024); Marteau *et al*. (2021)
	Norm-based Interventions	Bonfanti *et al.* (2024); Bastini *et al*. (2023); Van Der Linden *et al*. (2021); Kácha & Ruggeri (2019)
	Information-based Tools	Walker *et al*. (2020); De Vries (2020); Van Der Linden *et al*. (2015); Yoeli *et al*. (n.d.)
	Psychological/Perceptual Factors	Hall *et al*. (2018); Lacasse (2019); Bradley et al. (2020); Beiser-McGrath & Huber (2018); Heath (2025); Jenny *et al.* (2022)
	Policy Instrument/Design	Capano & Howlett (2020); Shen & Faure (2024); Van Der Linden *et al*. (2021); Phametal, (2023)
	Behavioral Interventions	Andor & Fels (2018); Bastini *et al*. (2023); Nisa *et al*. (2019); Nielsen *et al*. (2024); Stern (2020); Vlasceanu *et al*. (2024); Berger *et al*. (2024); Biresselioglu & Demir (2024); Marteau *et al*. (2021)
	Norm-based Interventions	Bonfanti et al. (2024); Bastini et al. (2023); Van Der Linden et al. (2021); Kácha&Ruggeri (2019)
	Psychological/Perceptual Factors	Hall *et al*. (2018); Lacasse (2019); Bradley *et al*. (2020); Beiser-McGrath & Huber (2018); Heath (2025); Jenny *et al*. (2022)
Adaptation	Psychological Adaptation & Trust	Bechtoldt *et al*. (2020); Reser & Swim (2011); Bradley & Reser (2017); Bonfanti *et al.* (2024); Singhetal. (2017); Aokietal. (2024)
	Behavioral Adaptation	Aoki *et al.* (2024); Rana *et al.* (2023); Spătaru *et al.* (2024); Pichler *et al.* (2023)
	Perception & Risk Communication	Bradley *et al*. (2020); Singh *et al.* (2017); Reser & Swim (2011); Nicolas *et al.* (2019)
	Psychological Tools to Support Adaptation	Heath (2025); Hirschi *et al.* (2015); Safavi & Bouzari (2019)
	Policy Tool Evaluation	Ulibarri *et al.* (2021); Yeganeh *et al.* (2020)
	Behavioral Adaptation	Aoki *et al.* (2024); Rana *et al.* (2023); Spătaru *et al.* (2024); Pichler *et al.* (2023)
Cross-cutting / Mixed	Behavioral Science in Climate Policy	Nielsen *et al.* (2024); Howlett & Rawat (2019); Mitev *et al*. (2023); Freschi *et al.* (2023); Clayton *et al.* (2015); Musetal. (2024)
	Public Support and Spillover Effects	Raimi (2021); Kukowski *et al.* (2022); Lacasse (2019); Norton *et al.* (2017)
	Meta-analyses and Frameworks	Bergquist *et al*. (2023); Nisa *et al.* (2019); Gowdy (2008); Buttenheim *et al.* (2023)
	Governance and Policy Diffusion	Page *et al.* (2024); Editorial (2021); Pongiglione & Cherlet (2015); Verfuerth *et al.* (2023)
	Communication & Engagement Strategies	Van Der Linden *et al.* (2015); De Vries (2020); Jenny *et al.* (2022)
Cross-cutting / Mixed	Behavioral Science in Climate Policy	Nielsen *et al.* (2024); Howlett & Rawat (2019); Mitev *et al*. (2023); Freschi *et al.* (2023); Clayton *et al.* (2015); Musetal. (2024)

Digital tools provide scalable platforms for delivering feedback, tracking progress, and maintaining engagement. Techniques such as gamification, mobile apps for energy tracking, or future-self visualizations can enhance emotional engagement and promote long-term habit formation (Vlasceanu *et al*., 2024). These technologies also offer opportunities for real-time data collection, supporting adaptive policy design and rapid learning cycles (Biresselioglu & Demir, 2024). Table 2 presents diverse intervention types in environmental and climate policy grouped by policy relevance context (i.e., adaptation versus mitigation).

4. Conclusion

Behavioural and psychological science constitutes a vital yet often neglected resource in advancing effective climate governance. While no single intervention offers a comprehensive solution to the multifaceted challenges of climate change, adopting an integrated and evidence-based framework that combines behavioural insights with institutional reforms can substantially enhance public engagement, policy adherence, and the realization of enduring systemic transformation (Nielsen *et al.*, 2024; Bastini *et al.*, 2023; Berger *et al.*, 2024). The complexity of climate governance necessitates that behavioural approaches move beyond isolated measures to become essential components embedded throughout policy design, implementation, and evaluation phases (Biresselioglu & Demir, 2024; Howlett & Rawat, 2019).

The challenge extends beyond individual behaviour change to encompass institutional change, requiring policymakers to rethink how climate policies are formulated, communicated, and experienced by diverse populations (Van Der Linden *et al*., 2021; De Vries, 2020). To foster the societal transformation required for climate resilience, behavioural interventions must be embedded in policy frameworks that prioritize equity, adaptability, and participatory governance, thereby ensuring legitimacy and sustained public trust (Bonfanti *et al.*, 2024; Verfuerth *et al.*, 2023).

Altering the social norms, values, and collective perceptions that fundamentally impact individual and collective behaviours is as critical as modifying physical infrastructures and market mechanisms (Dietz *et al.,* 2009; Raimi, 2021; Clayton *et al.*, 2015). Empirical evidence underscores that social identity, trust, and perceived efficacy strongly mediate climate-relevant behaviours, pointing to the need for approaches that are psychologically attuned and contextually tailored (Bradley *et*

al., 2020; Bastini *et al.*, 2023). When strategically integrated into multi-level policy frameworks, behavioural science offers a robust foundation for accelerating climate action and fostering resilient societies (Nisa *et al.*, 2019; Bergquist *et al.*, 2023).

The future of climate governance hinges on a holistic paradigm that merges behavioural insights with institutional innovation and systemic equity. This approach enables successful mitigation and adaptation while building the social and psychological capacities required ensuring long-lasting environmental stewardship. Behavioural science, when used efficiently, emerges as a cornerstone in the pursuit of sustainable and just climatic futures. These behavioural and psychological insights in climate policy together with other various synergistic effects and their associated pollution issues (Halkos, 1993a,b; 1994; 1998) will facilitate and simplify the determination of the optimal pollution level with a reliable approximation of the damage costs (Halkos and Kitsou, 2015). This underscores the importance of thoroughly understanding the problem in all its dimensions to take effective action toward sustainability.

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