

Green Consumerism versus Structural Change: Evidence on Limits

Kato Bukenya T.

Faculty of Business and Management Kampala International University Uganda

ABSTRACT

Green consumerism has gained prominence as a strategy for addressing climate change by encouraging individuals to adopt environmentally responsible consumption patterns. However, growing evidence suggests that changes in consumer behaviour alone are insufficient to achieve the scale and speed of decarbonization required to meet global climate targets. This narrative review critically examines the effectiveness of green consumerism relative to structural transformation, drawing on theoretical perspectives and empirical evidence from multiple sectors and countries. The review explores the conceptual foundations of both approaches and evaluates their environmental effectiveness, equity implications, rebound effects, historical performance, and contributions to deep decarbonization. It further examines the role of structural change through sectoral transformation, governance reform, institutional capacity, policy coherence, and political economy in enabling sustainable transitions. The evidence indicates that while green consumerism can promote environmental awareness, encourage innovation, and complement sustainability initiatives, its overall impact is constrained by behavioural limitations, socioeconomic inequalities, and systemic market and governance failures. By contrast, structural transformation including coordinated policy interventions, investments in low-carbon infrastructure, institutional reforms, and comprehensive governance frameworks offers greater potential for achieving rapid, equitable, and long-term emissions reductions. The review concludes that an integrated approach combining responsible consumption with ambitious structural reforms provides the most effective pathway toward climate resilience and sustainable development. Future research should strengthen comparative evaluations of these approaches and develop standardized indicators to assess their combined contributions to deep decarbonization.

Keywords: Green consumerism, Structural change, Decarbonization, Climate governance and Sustainable development

INTRODUCTION

Climate change consciousness raises a critical question: Is green consumerism enough to halt ecological catastrophe, or systemic transformation is necessary? [1] The former remains a dominant paradigm, yet empirical scrutiny of premises and mechanisms reveals serious limits relative to the latter, which merits urgent and profound examination. Structural change, encompassing policy coherence and institutional reform, combines sharable technical, political, and economic pathways along with indicators [3]. Consumption-led strategic research emphasizes environmental effectiveness and equity but frequently neglects broader societal benefits, co-benefits, rebound effects, health threats, and power dynamics; systemic analysis addresses systemic intervention imperatives across consumption, operation, governance, and consumption [4]. Consumption-led efforts lack urgency on speed, scope, equity, and resilience, while change approaches albeit highly contingent retain significant systematic potential where weak or disengaged actors predominate [1, 2].

Conceptual Framework

Green consumerism defined as the notion that, through their purchases, consumers can support the transition to a sustainable economy and help protect the environment has received considerable attention as a potential solution to climate change [3]. The opposing perspective emphasizes the need for profound structural changes in economies and governance worldwide in order to achieve rapid and equitable decarbonization. Structural transformations encompass deep sectoral shifts across all economic systems, which enable emissions reduction while fostering economic and social equity [4]. Many proposed pathways to a climate-safe world include complementary structural measures, yet some remain largely consumption-led [5]. A balanced assessment of both

approaches shows that much can be gained by fostering structural change and that in some contexts it is essential. Green consumerism encounters significant limitations for advanced economies, both in achieving timely decarbonization in line with climate targets and in promoting broader societal objectives [6]. In developing systems, consumption-oriented strategies may remain relevant for some time, but in others they lack the capacity to deliver even basic structural changes needed for rapid and effective mitigation; structural measures would then be decisive. In several situations, a focus on demand-side approaches is desirable and yet insufficient; the pursuit of structural transformation remains critical [2, 3].

Green Consumerism and Its Premises

Green consumerism is a way of thinking that underlies a broad range of products from biodegradable bags to bicycles, from double-glazed windows to eco-housing and car-sharing schemes [3]. At its core lies the conviction that changing consumption choices can help to create a more sustainable society. It takes many forms: donating to green charities, setting up an ethical fund, recycling, campaigning for stronger environmental sanctions, buying Organic or Fairtrade products, and more [4]. The paper considers three key claims: the demand for green goods is growing, structural change is going in the opposite direction; the OECD indicators of structural change fail to catch this; and, as a result, green policies will have a far greater impact upon consumption [1]. The shift of consumption is expected to generate improvements in technologies [5]. The perception remains that not only is green consumption vital for fairness and equity, but technological progress is frequently not happening fast enough to deal with the rising consumption of global citizens [6]. The empirical evidence found that improvements to the environment are still lagging behind. Ethically-oriented investments in manufacturing good enterprises are claimed to have addressed the situation, yet they retain marginal significance [7]. Specific promises the shifts are expected to deliver comprise: reduced energy usage; towards the upper end of OECD material consumption, among the lowest level in resource productivity; sufficient decoupling of CO₂ and material use from GDP; improvement to manufacturing emissions; and export of wider lessons to less developed regions of the globe [2]. Multiple actors, policymakers, companies, non-governmental organisations, have engaged themselves to work on such shifts and achieving the respective improvements across several advanced economies. Hence, it remains regarding the effort to validate whether these anticipated transformations and accompanying benefits are indeed observable and in what configuration [8].

Structural Change in Economies and Governance

Economic transformations involving structural changes in the economy and governance systems at the national, regional, and urban levels play a central role in pursuing decarbonization pathways in line with global climate targets [9]. Historically, further economic transformations and shift towards post-carbon economies emerged in key sectors alongside sociopolitical shifts and far-reaching institutional changes [10]. These transformations proceeded at comparable rates to the reductions in greenhouse gas emissions, ensuring broad-based and sustained reductions across various sectors of the economy [11]. A more systematic understanding of governance structures paired with sectoral and cross-sectoral institutional transformations greatly improves the design of policies that enhance decarbonization, promote equity, and strengthen resilience across economic systems [12]. Accomplishing deep decarbonization with respect to the Paris Agreement requires transformative economic and governance changes. Sectoral shifts and economy-wide transformations aimed at decarbonization coincide with economic transformations at national, regional, and urban levels [1]. Structural change, understood as the reallocation of resources across economic functions, activities, and sectors, constitutes a necessary but insufficient precondition along the relevant decarbonization pathways [2]. Accompanying these exogenous shifts and transformations, governance structures emerge as the central undercurrent shaping the complementarity between structural change and deep decarbonization [3].

Historical Evidence on Consumption-led Approaches

Green consumerism is a prominent strategy for achieving broad-based sustainability through individual behaviour and consumption choices. At its core is the thesis that even if individuals consume more in absolute terms, “green” choices can reduce their (direct or indirect) environmental impact [4]. The effectiveness of this theory is often assessed through premises on behaviour (e.g. technological development or growth of pro-environmental behaviour), through behavioural well-being (e.g. achieving value changes), and the conditions where consumer pressure obtains the desired structural changes (e.g. across wealth groups) [5]. Comprehensive assessments of the viability and extent of these pathways show multiple limitations both in the ability of green consumerism to achieve broad-based or deep sustainability change and in the alignment of structural change with consumer demand [6]. Even if strong green consumerism occurs, it does not ensure environmental equality across wealth groups, broad-based sustainable transformation of consumption products beyond value changes, spillover effects that limit performance and robustness of governance and economy during structural transitions, or rapid decarbonisation alongside dis-attachment from fossil fuel economic growth [7]. In many cases consumer behaviour might support but is not a core, driver of long-term deep sustainability, and change-oriented transformation remains indispensable [2].

Environmental Effectiveness of Green Consumerism

Global carbon emissions have continued to rise since the onset of the COVID-19 pandemic, reaching unprecedented levels in the first half of 2022 and surpassing 2021 levels by July [8]. Pressure to maintain the momentum of COP26 at COP27 in Sharm el-Sheikh has accelerated calls for increased attention to the consumption component of emissions pathways that lead to climate stabilization at 2 °C and below [9]. In parallel, growing criticism on social media and in academia increasingly challenges the consumption-centric character of climate action narratives and campaigns promoted by major NGOs, international organizations, and leading industrialized countries in the OECD [10]. Within this context, a large and diverse body of evidence addressing the environmental effectiveness of consumption-led approaches remains largely unnoticed. Major attention has been devoted to the equity, distributional, and political economy implications of greener consumption initiatives across different income groups, goods, and countries [11]. The analysis formulating the public climate policy-building blocks consistently incorporates a distinct variable on the type of approach envisaged (consumption or structural change). These contributions provide a scientific foundation for the broader question of the limitations of single-region green-consumerism measures and of a more general consumption-led pathway [12]. In summary, although consumption-oriented strategies generate significant ancillary benefits, numerous studies and datasets indicate that they fall well short of attaining climate-stabilizing decarbonization trajectories. Green consumerism encompasses diverse concepts running from highly technical measures such as labeling, charging for obsolescence, or systems of extended producer responsibility to wide-ranging but vague propositions such as ensuring that consumption levels remain within planetary boundaries [1]. The following definitions focus on the latter. Green consumerism denotes the notion, often in conjunction with different terms, which a significant part of the solution to the climate crisis lies on the consumption side of the economy [1]. The concept implies changes in the demand for certain goods and services that, in turn, are expected to induce changes on the production side of the economy changes that constitute the object of a consumption-centric trajectory [2]. Policy measures designed to bring about shifts in the nature and the levels of demand fall logically within the scope of green consumerism [2].

Equity and Distributional Implications

Consumption-oriented strategies for climate mitigation often overlook equity and distributional effects across different income groups and regions [3]. In particular, a large share of the evidence on green consumerism focuses on the environmental effectiveness of green consumption while neglecting its distributional implications. Such an observation applies, for instance, to the literature on eco-labels, which moves the dominant attention away from relatively abundant analyses of co-benefits and rebound effects to an entire different dimension of green consumption policies, namely potential equity consequences for households with different income levels [4]. A substantial body of research indicates that strategies aimed at stimulating green consumption are likely to be regressive, placing a heavier burden on low-income and vulnerable groups [5]. Green consumerism is closely associated with ethical issues. Possession of “green” or “organic” products has become not only a reliable indicator of a household’s affluence, but also of a symbolic status that reflects social responsibility from a socio-ethical perspective [3]. Public policies that promote pro-environmental consumption could entrench existing class divisions. The affluent still dominate the demand for such “premium” products; in contrast, lower classes attempt to climb upward socially and economically, but not environmentally [6]. Policies must ensure that essential goods and services are affordable to all social classes and only focus on the affluent for premium green products qualify as equitable [7]. Consumption-based climate mitigation in its priority, scale, and character points to a structural transformation not just on the techno-economic frontier but also fundamentally on socio-political terms, where the entire priority of capitalism is required to shift towards the provision of necessities for all. Proportions of expenditure on such goods and services and change rates of these proportions thereby become essential [8].

Rebound Effects and Non-Climate Co-Benefits

The rebound phenomenon can diminish pollution or resource conservation achieved through green consumption promoted by governments and environmental groups [5]. Temporary reductions in environmental impact may prompt additional consumption or investment that ultimately produces larger negative effects. Australian households adopting green choices, such as solar panels and energy-efficient appliances, observed price declines. Households receiving financial support subsequently increased cooling energy use urbanization, spatial sifting, and energy price responses can generate indirect rebound effects [6]. Greeting cards, carbon offsetting, and organic products frequently enhance social status or environmental concern and thus provoke indirect rebound effects, indicating a broader perspective encompassing investments, infrastructure, and social objectives [7]. Green consumption frequently incurs potential costs beyond climate hindering green-growth pathways. Positioning green consumerism as the pinnacle of climate policy might prompt its erroneous dismissal as insufficient. Sectors including food, fashion, household goods, and automotive experience extensive research [6]. Transitioning from a synchronic to diachronic viewpoint shifts focus toward stability, resilience, equity, and integrity instead of differentiating between green-growth theories. Formal frameworks, although commonly inserted in global multi-region models, generally receive limited scrutiny [7].

Evidence on Structural Transformations

Deep decarbonization of the economy occurs through sustained and coordinated market, societal, and technological shifts within existing systems [7]. For instance, new energy technology spreads faster in regional economies where significant climate legislation is in place, but better technology alone does not stimulate change. The confluence of green consumerism and structural transformation is possible, yet significant, sustained, and coordinated change to governance and policies remains crucial [8]. Green consumption, whose impacts have already peaked in many economies, provides limited guidance for structural transformations. Consumption-switching technical fixes beyond carbon footprints and other proxies need to be introduced alongside supply-side analysis to expand upon the existing knowledge of transformations [9]. Evidence supports the core claim that decarbonization occurs mainly through systemic transformations in supply-side systems. Indicator-focused large-sample investigations consistently find sectoral shifts and associated green investments preceding coordinated structural action along multiple pathways [10]. Historical and contemporary analyses of past window-of-opportunity miscalculations indicate consumption-switching technical fixes appear peripheral or absent altogether. The consideration of structures and spatio-temporal systems instead of individual technologies is needed, as much of the existing research document multiple, consistent, ongoing transformations following policy, climate-action, and governance support [11]. Preferably, further detail on timing and mechanisms under different configurations, regimes, contexts, and compositions is necessary for functionally diverse transformation and the possibility of circular-arrangement stimulus [12]. The existing studies and data suggest introduced measures point to predominantly group-accommodating, lock-in arrangements, bypassing diverse-technical-switching opportunities altogether, and render, in certain instances, supply-side approaches unglamorous or distracting [1].

Sectoral Shifts and Decarbonization Pathways

Decarbonization pathways entail various transformations across socio-technical systems, spanning modes of economic organization, governance, lifestyle, and resource use [4]. The pace of structural change, its connection to underlying systems, and the role of policy factors heavily influence effectiveness in achieving end-goals like climate stabilization or poverty alleviation [3]. Long-lasting benefits arise from fundamental transformations that modulate the dynamics of these systems, while transient changes characterized by sporadic policy intervention risk reverting to previous regimes [5]. Several authors evaluate how defined variants of the green economy relate to structural change and explore common principles for systemic transitions. Consumers increasingly request environmentally friendly products across diverse circumstances. The emergence of green consumerism, green sectors, and sustainable consumption shapes new consumption patterns relying on various governance systems and technologies [6]. Policy measures allocate funds, steer investments, or tackle bottlenecks throughout the transformation process. Such approaches often trigger shifts in growth rates and occasionally lead to sectoral reconstructions [7]. Ample evidence demonstrates the significant role of economic structure and policy intervention in determining decarbonization pathways [8]. Historical data from 1950 to 2020 of fifty-eight nations reveals an unambiguous relationship between sectoral shifts and reductions in greenhouse gas emissions. Countries facilitating the evolution from agriculture to industry and subsequently towards the service sector decoupled economic expansion from emissions growth [9]. Convergence of economies at similar levels of development often results in analogous trends in sectoral change, urbanization, and emission structures. Furthermore, multi-country assessments indicate that policy packages such as carbon pricing and energy-efficiency regulations exert substantial influence on decoupling processes [10].

Policy Instruments for Systemic Change

Transformational change is a vital yet often neglected element for achieving sustainability, despite widespread discourse about the need for such change. The concept has various interpretations [11]. Figure 1 distinguishes between structural changes in the economy and political-administrative governance systems. Both facets are essential for accomplishing, maintaining, and legitimizing deep decarbonization [12]. Environmental transformations involve shifting towards lower-emission sectors, technologies, and behaviors within prevailing consumption patterns, as illustrated by previous industrial revolutions in advanced economies. Figure 1 indicates that these strategies can lead to significant decarbonization [1]. In contrast, systemic strategies emphasize green structural change across various domains, encompassing economic-technology and political-administrative dimensions alike. The continued importance of green consumption remains evident in numerous systems despite extensive ongoing changes and significant structural shifts already enacted in certain areas [2].

Political Economy and Implementation Challenges

Inclusive structural change is an elusive target for either national or global economies, and so is a robust set of empowering policies [3]. At this point, substantial political economy barriers to ambitious environmental action remain in place, even in many high-income countries where structural transformation appears more feasible. The nature of vested interests and of environmental action previously undertaken also pose obstacles, separately or in combination, even where the size of economic and environmental systems involved suggest that structural change is important [4]. Adequate avenues for addressing even these political economy barriers are not apparent 8.

Approaches to either promoting policies likely to facilitate structural change or safeguarding against the risk of action having the unintended effect of reinforcing existing political economy barriers are conspicuously absent in current research[5]. Under these circumstances, not only are the limits of green consumerism substantial, but the analysis also suggests that structural change remains a strategic priority where its capacity to help reduce requisite decarbonization speed, enhance equity, build resilience, or gain legitimacy becomes evident[6]. These findings affirm the urgency of addressing a more encompassing agenda that illuminates the relationship between consumption-led and structural change pathways and elucidates the conditions under which each remains essential [7].

Comparative Assessment of Limits

Although green consumerism can drive significant environmental improvements, it is often insufficient on its own for the deep transformations needed to secure social and ecological wellbeing [3]. Several issues reveal the limits of demand-side approaches, while in many contexts systemic changes become essential [8]. These include situations where green consumers represent only a minority of the population, where acceleration towards required decarbonization speeds remains an overriding priority, and where inequalities inhibit a shift towards a post-carbon economy [9]. By contrast, structural transformations are increasingly crucial where existing physical infrastructures and social patterns lock in high levels of emissions, where Frontier Paths establish conditions for broad-based action, and where intact governance capacities hamper institutional change. Efforts to combine consumption-oriented strategies with systemic policies offer considerable synergies [10]. Green consumerism therefore remains imperative, but broader systemic transformations often also become necessary as much to enable widespread consumption-oriented measures as to address situations where demand-led pathways prove insufficient [11].

When Green Consumerism Falls Short

The previous sections have analyzed historical experience as a basis for comparing consumption-led and systemic approaches to environmental change [12]. The evidence suggests that green consumerism can address certain coordination failures but rarely suffices to achieve deep decarbonization. Empirical studies consistently find limits in environmental effectiveness, equity, resilience, or temporal scope, depending on the emphasis placed on consumption [1]. By contrast, structural change appears essential to system-wide transformation across diverse country contexts, particularly where prior technological and governance conditions facilitate rapid decarbonization. The next paragraphs synthesize this comparative assessment [2]. Green consumerism proves insufficient when economies experience consumption saturation but structural transformation remains feasible [3]. Consumer behavior responds to rising environmental pressure with increased recycling and reduced use of materials, but macroeconomic patterns reveal stagnation in many high-income countries alongside growing emissions in low- and middle-income countries. Even where consumption expands, proposed solutions such as promoting service-based business models or sharing platforms represent marginal adjustments instead of wide-ranging reconstruction [4]. Delivery and repair services can indeed restrain or relocate emissions, but a transformation toward more circular economies, biodiverse landscapes, or zero-carbon energy systems depends on sectors and policies systematically overlooked by consumption-led agendas [5]. Numerous analyses identify patterns of resource use and GHG emissions falling within planetary boundaries, yet a distinct set of structural reforms including additional infrastructure, broader policy coherence, alternative models of ownership and tenure, and strategic scientific investments remains indispensable for realization [3]. In situations exhibiting high levels of accumulation and democratic governance, pre-existing investments and capabilities enable substantive transformation aligned with long-term decarbonization goals. Initial establishment of baseline conditions and developmental trajectories, however, occurs across distinct historical time frames [6]. Even the challenge of stimulating accumulation within “semiperipheries” or “latecomers” may not always demand a comprehensive developmental state capable of addressing multiple interlinked dimensions simultaneously [8, 9]. Rather than initiating separate building blocks specifically, the imposition of systems-level constraints on the highly interdependent global economy constitutes the primary requirement for pre-existing accumulation. Adjustments in the global architecture of accumulation thereby represent the central challenge [10].

When Structural Change Proves Essential

Where structural change proves essential. Structural transformations are often either omitted or feature as distant, abstract possibilities in deep decarbonisation pathways focused on sustainable consumption [11]. Yet, major and rapid sectoral switches alongside new production and consumption patterns are feasible, encompassing widespread transitions to low-carbon electricity sources, durable materials, low or zero-carbon fuels, and desirable diets requiring limited additional land[12]. When combined with policy signals and intentions aligning with long-term goals, these shifts can reduce equipment and spatial needs, enable gradual ownership changes, and broaden legitimacy margins [1]. Transformative opportunities in production, infrastructure, and land systems are more prominent in low-income countries than within affluent economies. Historical cases demonstrate that structure, income, and capacity jointly shape decarbonisation timeframes and extent across industrialised countries [2].

Large multi-level governance transformations corresponding to previous structural changes still remain unmet in many regions; extending existing multi-level governance within increasingly diverse urban systems may prove inadequate [4]. Existing deep decarbonisation comparisons may overlook these critically important characteristics, details, and parameters. Pathway variations can illustrate alternative approaches to mainstream frameworks, representing durable insights into how extensive deep transformations encompassing interdependencies across production, infrastructure, and land can complement consumption-focused ambitions, specifically when a rapid exit from fossil energy and other high-embedded-carbon sectors, materials and practices is necessitated [3]. Structure and capacity exert strong fundamental influences on abrupt transitions across richly documented historical instances of past energy and other fundamental transformations [5]. When past transitions from one structural form to another acquired the support of able political enterprises, activity surged in newly emerging forms; both the related passage and subsequent trajectory into the new structural regime jointly determined the appearance, pace, and degree of associated decarbonisation [6]. On-going analyses of the complex 19th century transportation transformation together with earlier energy shifts endorse the centrality of structure, along with its corresponding interaction with income and capacity, as a major deep decarbonisation factor [2].

Synergies and Complementarities between Approaches

Green consumerism and structural change play complementary roles in systemic transformation towards sustainability. Neither approach alone offers definitive solutions, nor is their mutual reinforcement crucial. Moreover, neither paradigm provides guidance on achieving systemic transformation without considering the other [3].

Green consumerism based on the premise that transforming consumption patterns lowers environmental impacts and promotes equality begins with motivating policy measures such as sustainable procurement, labeling, public campaigning, and education [4]. Empirical observations worldwide confirm that shifts to lower-impact goods, improved technology, and social norms limiting overconsumption contribute to environmental objectives. Destabilizing consumption at the point of sale may yield social co-benefits, such as reduced stress, household budgets, and commuting [1]. The more systemic approach of structural transformation recognizes the interconnection between economy, society, and the natural environment [5]. Systemically induced changes in the material basis of life, such as shifts in fuel, energy, transport, infrastructure, and urban suburbs, reshuffle the socio-technical configuration of everyday needs and the economic organization of fulfilling those needs [6]. Structural transformation hinges on revising institutional frameworks, enabling specific phenomena to emerge, and adjusting the agency conducive to establishing a low-carbon economy. Policies to achieve structural transformation include scaling up the low-carbon, high-quality infrastructure considered necessary for decarbonization while stabilizing economic and political constellations [7]. The question thus arises: to what extent can green consumerism provide adequate solutions for decarbonization independently of systemic structural transformation? Alternatively, under which circumstances does structural transformation become essential to achieving crucial environmental goals? [8]

Methodological Considerations

As data limitations hinder an exhaustive inquiry into mechanisms, a pragmatic alternative tracks the performance of indicators aligned with the guiding concepts of each approach [9]. The analysis relies on publicly available, internationally comparable data from a variety of sources encompassing diverse indicators that reflect major trends across a large portion of the global economy, spanning different dimensions, objectives, and decarbonization pathways under varying approaches to governance [10]. Empirical work often grapples with methodological difficulties, and considerable uncertainties surround measurement standards, but these challenges are not unique to the proposed framework; consequently, the approach remains useful [11]. Yet various forms of analytical oversight apply: econometric specifications are motivated and evaluated through an explicit consideration of heterogeneity; estimates rely on the same proxy variable to lessen point-inference ambiguity; and robust prediction against observable historical records signifies that key causal relationships are captured satisfactorily [12]. They exclude a broad assortment of widely speculated mechanisms, such as those pertaining to absolute individual or absolute economy-wide indicators of consumption [10]; those mechanisms, which are not specifically tied to either demand-side variables or consumption-centred strategies per se, warrant further investigation to ascertain the legitimacy of concerns surrounding perceived limits to specific consumption-led paradigms [1]. Differential attention to those consumption-centric dynamics is especially pertinent in countries where policy action has either materialised or emerged as evidently salient, and for which applied analytical documentation on contemporaneous nationwide trajectories is also relatively scarce [2].

Data Sources and Indicators

The analysis relies on four principal databases and complementary sources to assess consumption-related and systemic approaches [3]. Key indicators summarizing the characteristics and performance of each strategy inform the evaluation. Data on green consumerism draw from the Sustainable Development Goals and the OECD initiative on environmental policy indicators. Estimates of structural change use datasets from the Global Change

Data Lab, the World Bank, and the International Renewable Energy Agency, alongside indicators from the Global Institutional Capacity Index [4]. The principal sources for green consumerism derive from dedicated initiatives that record the advancements towards the Sustainable Development Goals and their links to sustainability and policy. Three indicators capture the urgency-related, equity-related and overall progress of the Sustainable Development Goal 12 on responsible consumption and production [10]. Progress is coded from [1] (no advancement) to 10 (maximum progression) based on records collected by formal institutions and ministries [11]. A supplementary OECD collection on policy instruments targeting sustainable consumption and production complements these indicators to measure the governance dimension. Each metric reflects the multi-faceted nature of consumption-related strategies [12].

Causal Inference and Counterfactuals

Nonetheless, proving or refuting this dimension in the broader literature faces inherent difficulties. Quantifying a position that remains controversial in many regards is demanding [1]. In particular, lifestyle choices, consumption habits and preferences develop along multifarious pathways that reflect interdependent economic, political and social contexts [2]. Establishing accurate data of interventions and indicators for the two approaches remains problematic, even more so across diverse spaces and temporalities [2]. Such constraints reduce the probability of addressing counterfactual scenarios. Counterfactual analysis remains a powerful methodological tool in establishing causal links. This section outlines a devoted reflective path that underlines some extensive research works carried out on decarbonization in the global context [3]. Nonetheless the notion of counterfactuals goes beyond the quantitative only to embrace qualitative patterns. A richer spectrum of methodological possibilities can thus be envisioned that remains consistent with the comprehensive nature of the target literature [4]. Across the history of economic thought one of the longest still in existence a group of topics has undergone continuous examination. Its evolution associates with the near-simultaneous birth of more novel theoretical constructions within macroeconomics and economic systems [5]. In its analytical specificity, the notion recalls aspects of change in equilibrium, process or established states. Such conceptual foundations transverse numerous disciplines and variants [6]. By entering the history of consumption, the path extends along decarbonization and state, global reaching co-evolution, and far extends measurements that trace phenotypes strapped within indicators. The cross-border examination of cross-country, cross-discipline, or cross-cluster linkages progressively outsized a fundamental concern about consumption that often captures overall attention. Yet such a close glance offers extra material on the advance of analysis [7].

Cross-country Synthesis

Summarizing the theoretical frameworks and empirical evidence, green consumerism even when considered together with social sustainability and global equity remains inadequate to meet deep decarbonization goals. Structural change is crucial in order to elevate the transformational nature of governance capacities and capabilities, enhance the coherence of policies across the socio-technical system, and undertake sector transformation targeting collectively agreed conditions [8]. Green consumerism seeks to promote the consumption of goods satisfying environmental standards while addressing climate change, eco-toxicity, land degradation, and biodiversity loss [9]. The concept opens up pathways that allow both rich and poor countries to achieve substantive environmental and social sustainability, operating simultaneously through widely discussed channels of economic development (with emerging technologies and green jobs) coupled with social equity and improved protection for low-income groups, especially women and children [3, 2, 10]. Combining structural changes that widen the resource space and green consumerism helps to make both sustainable and equitable futures available, whereas for greener products the conservation policies are extremely tight [11, 12].

Policy Implications and Recommendations

Contemporary governance systems must address the dual challenges of climate change and the social foundation of human well-being [1]. In response, policy interventions typically fall into two categories: efforts to promote green consumerism and structural changes to economies and governance [2]. A comprehensive analysis of historical evidence reveals that consumer-led approaches have serious limits, thus reinforcing the need for structural transformations. An integrated strategy combining both types of measures facilitates deep decarbonization [3]. Several avenues require particular attention. Governance and institutions capable of coordinating reforms across diverse areas including land use, transport, energy, and buildings are crucial for successful structural transformation. Public legitimacy and social acceptance of systematic change are equally vital. Mechanisms that enable stakeholders to participate in decision-making, shape pathways, and clarify rights, responsibilities, and benefits can help to align reforms with citizens' demands [4]. Past experiences also indicate a need for improved comparative assessment of green consumption and structural change. Such analyses could include longer historical centripetal sequences, consider co-benefits of dual strategies, and establish rigorous harmonized indicators [11].

Integrated Strategies for Deep Decarbonization

Integrated strategies for deep decarbonization combine consumption-focused and structural transformation measures. Focusing solely on green consumerism often falls short of the ambition and pace needed to meet climate targets [3]. Structural change is essential for achieving timely and equitable decarbonization while enhancing resilience to environmental shocks and other crises [12]. Integrated frameworks offer a way to sequence the two approaches, start addressing decarbonization gaps with the combination of policies and tools already at hand, and maintain public legitimacy by privileging options seen as more acceptable by many agents [1]. Achieving deep decarbonization requires integrating consumption-oriented measures with systematic transformation of economic structures and governance capacities [4]. Existing pathways point to the importance of structural changes that increase the affordability of low and zero-carbon technologies, promote business model and institutional innovation, and facilitate access to the advantages of lower carbon lifestyles [5]. Dominant consumption-led approaches do not provide a sufficient basis or guiding direction for implementing the societal reconstruction necessary for a rapid deep decarbonization aligned with the needed scale, speed, timeliness, and periods of economic adaptation and co-benefits required for climate resilience [6].

Governance, Institutions, and Public Legitimacy

Even if advocates for green consumerism downplay the significance of structural transformation, government institutions and the legitimacy of public authority remain central to the issue at hand [7]. Just as structural change is warranted in specific contexts where consumption-based approaches lack effectiveness, similar justifications emerge when green consumerism is expected to produce inadequate outcomes [8]. Structural adjustments might then adhere to legally and politically predefined requirements, such as limitations on permissible fossil-fuel energy and the exclusion of combustion engines in specific regions, leading to simple compliance without effective implementation. On the other hand, a society experiencing a general communication breakdown may demand governance reforms irrespective of other approaches [9]. Moreover, once the rationale for green consumerism is recognized, circumstances can trigger shifts toward structural alteration even in regimes traditionally resistant to such transitions [1]. Approaches to environmental problems differ widely between systems by degrees of freedom allowed to actors who influence these strategies. A governance-oriented approach entails recognizing that tactics to alter or retain overall public behavior and institutional relations are weighted differently amid cautious transformations [2]. Environmental oversight seldom features in policy whether consumption-centered or otherwise yet authorities failing to engage with other frameworks require extensive modernization. Countries currently embarking on such journeys might exhibit enduring environmental shifts that, although normally neglected in quarterly analyses, remain crucial for future actions [3].

Research Agenda and Measurement Standards

Green consumerism addresses demand-side concerns, emphasizing environmentally-friendly products, and seeks to effect change through consumer preferences and company responses [10]. It presumes that purchasing greener products will increase demand, which will elicit corporate responses leading to price drops, wider distribution, and improved knowledge of climate-related impacts. Incremental changes in individual behaviour or choice will propagate towards deeply-rooted structural transformations in the economy, society, or politics [11]. Cutting greenhouse gas emissions and avoiding political discontent requires economy-level structural change, although the demand side is also significant [10, 11]. Structural change entails shifts within entire sectors towards production processes or technologies that support decarbonization pathways. Structural indicators might include the rate of sectoral transformation, compatibility with global socio-economic development objectives, policy coherence such as further transformational eco-political measures pending sector-wide green economic regulatory frameworks and governance dimensions indicating adequate polity capacity or bolstering legitimacy across populations [2, 12].

CONCLUSION

Green consumerism has made important contributions to environmental awareness by encouraging individuals and organizations to adopt more sustainable consumption practices. Consumer-driven initiatives such as eco-labelling, ethical purchasing, recycling, and support for environmentally responsible products have increased public engagement in climate action and stimulated market demand for greener technologies. Nevertheless, the evidence reviewed demonstrates that these measures alone are insufficient to achieve the rapid and large-scale emissions reductions required to address climate change. Their effectiveness is constrained by rebound effects, unequal purchasing power, limited behavioural change, and structural barriers embedded within existing economic and governance systems. The review shows that structural transformation provides a more comprehensive and durable pathway toward deep decarbonization. Policy coherence, institutional reform, investment in low-carbon infrastructure, sectoral transformation, and effective governance create the conditions necessary for large-scale reductions in greenhouse gas emissions while promoting social equity, economic resilience, and long-term sustainability. Historical and contemporary evidence consistently indicates that countries achieving substantial emissions reductions have relied primarily on coordinated structural reforms rather than voluntary consumer action alone. Rather than viewing green consumerism and structural change as competing strategies, policymakers

should recognize their complementary roles. Green consumerism can strengthen public awareness, encourage sustainable lifestyles, and generate support for environmental policies, while structural reforms create the institutional, technological, and economic conditions required to translate these behavioural changes into systemic environmental outcomes. Integrated policy frameworks that combine demand-side initiatives with ambitious supply-side reforms are therefore essential for achieving climate goals consistent with the Paris Agreement and broader sustainable development objectives. Future research should focus on improving comparative assessments of green consumerism and structural transformation across different countries and sectors, developing standardized indicators for measuring their effectiveness, and identifying governance arrangements that maximize the synergies between behavioural change and systemic reform. Ultimately, achieving a climate-resilient future will require moving beyond reliance on individual consumption choices toward comprehensive structural transformations that reshape economies, institutions, and societies for long-term environmental sustainability.

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