Sustainopreneurship for climate action: a conceptual framework from literature

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Sustainopreneurship for Climate Action: A Conceptual Framework from Literature

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Abstract - **Climate change raises environmental risks and social inequality, and the role of entrepreneurs in bringing climate solutions to market is still not well studied. This paper builds a conceptual framework from the literature to explain how sustainopreneurs support climate action. The study uses a systematic review of peer-reviewed papers and selected proceedings, a thematic evidence map, and an abductive synthesis to identify key constructs and links. The analysis points to five linked mechanisms: problem sensing, mission orientation, effectuation-based venturing, community anchoring, and institutional interfacing. These mechanisms guide ventures toward mitigation through clean technologies and circular practices, toward adaptation and resilience through reliable and affordable services, and toward climate justice through access and inclusion. Outcomes differ with policy settings, capability levels, and market awareness, while helpful levers include training and digitization, recognition and finance, and public-private partnerships. The paper contributes an integrative framework and testable propositions with practical guidance for policy, education, and ecosystem design.**
Keywords– **Sustainopreneurship, Sustainable Entrepreneurship, Climate Change, Climate Action, Sustainability**

I. INTRODUCTION

Climate change increases environmental risks and widens social inequality, which directs research and practice to entrepreneurship that provides solutions with environmental and social value. Sustainopreneurship, which is entrepreneurship aimed at sustainability, presents "business with a cause" to achieve triple bottom line results (economic, environmental, and social) rather than profit only [1], [2]. A mission-driven intent sets sustainopreneurs apart from typical founders, and it fits effectuation logic that uses available means, accepts affordable loss, leverages contingencies, and builds partnerships to create opportunities under uncertainty [2]. Despite growth in the field, reviews report conceptual fragmentation and limited empirical depth [3], [4]. At the same time, policy debates often focus on invention and give less attention to the entrepreneurial commercialization that enables adoption at scale [2]. These gaps motivate an integrated account that links
sustainopreneurship mechanisms to concrete pathways for climate action.

Although case evidence has grown across green technology ventures, grassroots water and waste services, and circular economy initiatives, a consolidated explanation of how sustainopreneurs turn sensed problems into mitigation, adaptation and resilience, and climate justice outcomes is still limited. Common barriers include fragmented or weak policy support, price and scale disadvantages relative to conventional offerings, and low public awareness, especially in developing economies [5]. Grassroots enterprises often face capability gaps in registration, bookkeeping, and marketing, which weaken viability even when social need is high. Targeted training and digitization are suggested as immediate ways to professionalize such firms while keeping services affordable for low-income users [6]. The literature therefore needs a mechanism-focused synthesis that specifies the conditions under which mission orientation and effectuation lead to climate outcomes, and the institutional and community interfaces through which this occurs.

This study has three objectives. First, it consolidates definitions and theoretical foundations of sustainopreneurship, with emphasis on mission orientation, triple bottom line value, and effectuation [1], [2]. Second, it synthesizes climate-relevant evidence across green technology, grassroots and frugal innovation, and local service delivery to inductively derive pathways that link venture processes and stakeholder engagement to climate outcomes. Third, it proposes a conceptual framework and a research agenda that identify key barriers and enablers, including policy design, financing architectures, skill development (including digitization), and networked partnerships, which matter most for scaling sustainopreneurship for climate action [3], [5], [6], [4].

The scope is literature based and thematically limited to sustainopreneurship for climate action. Priority is given to peer-reviewed studies and selected conference proceedings that analyze ventures producing environmental outcomes directly linked to mitigation, such as clean energy and waste or resource efficiency, or to adaptation, resilience, and justice, such as affordable water access and services for vulnerable groups.

The remainder of the paper reviews definitions and theories, synthesizes prior studies by theme to derive propositions, presents the conceptual framework with implications for research, education, and policy, and ends with limitations and directions for future research.

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II. LITERATURE REVIEW

Sustainopreneurship is usually defined as entrepreneurship that aims at sustainability and joins economic viability with environmental care and social value, known as the triple bottom line [2], [7]. Conceptually, it stands out because it is driven by a cause and treats social and ecological problems as the space for entrepreneurial opportunity [7]. Within this view, effectuation is a common theory, since sustainopreneurs start from available means, accept affordable loss, use contingencies, and build partnerships to create solutions when the future is uncertain [2]. Reviews show growing attention, but they point to conceptual spread and call for frameworks that link these logics to climate action results [3], [4].

Studies on sustainopreneurship and climate action group into several themes. First, work on green technology ventures stresses mitigation. Ahamat [2] shows that green technology entrepreneurs use effectuation and mission focus to design and bring to market products that lower environmental harm [2]. By treating sustainability as a core value offer and not a limit, these ventures avoid tradeoffs and seek gains in both ecological performance and competitiveness [2]. The reported mechanisms are mainly market facing, for example new offerings in energy, transport, or pollution control. Yet many enablers sit outside markets, such as access to networks, collaborative partnerships, and legitimacy for "green" value propositions, which the study notes are important for the move from prototype to adoption.

A second line studies grassroots and bottom of the pyramid enterprise, where climate action often appears as adaptation and resilience. Nthuni, Mugo, and Owako [6] analyze small water providers in informal settlements and show that these micro-operators improve access and affordability for low-income residents, which is a resilience outcome in places where climate variation and weak infrastructure worsen water insecurity [6]. Although they create social value, these ventures are commercially fragile because business capabilities such as registration, finance, and record keeping are weak, and digitization is limited. Suggested fixes include formalization, targeted training in marketing and financial management, and digitizing billing and operations to improve viability while keeping prices affordable [6]. This stream shows that community anchoring, and the right capabilities are needed for climate relevant services to grow and endure.

A related line maps barriers and enablers in policy and market settings. Perera and Abeysekera [5], using multiple cases from Sri Lanka, identify repeated obstacles, including unsupportive or fragmented policy, price and scale disadvantages against conventional rivals, and low public awareness of sustainability [5]. They call for recognition and tailored support tools, such as legal forms, financing vehicles, and information platforms, to lower transaction costs and signal legitimacy. In parallel, work on identity and capability suggests that environmental values and sustainability education help move founders from "entrepreneur" to "sustainopreneur," with implications for workforce development and curricula [7]. Taken together, these strands indicate that climate focused ventures depend as much on institutions and capability support as on the business model.

At the field level, state of the art reviews helps place these themes in context. Aghelie, Sorooshian, and Azizan [3] describe the domain as nascent, with a strong conceptual focus and relatively few empirical studies, especially those that link mechanisms to measured environmental outcomes [3]. Terán-Yépez et al. [4] provide a bibliometric map that shows growth and fragmentation and calls for clearer definitions and integrative models [4]. Taken together, these reviews point to a methodological opportunity for systematic synthesis that keeps focus on climate relevant outcomes, such as mitigation, adaptation and resilience, and justice, while tracing the processes and contexts that shape them.

Across themes, the contributions to climate action can be grouped into three pathways. Mitigation appears when sustainopreneurs bring to market cleaner technologies or circular practices that cut emissions and waste [2]. Adaptation and resilience are observed when ventures secure reliable access to essential services, such as water, under environmental stress, often through locally adapted low-cost delivery models [6]. Climate justice and inclusion appear when affordability and participation for low income or marginalized users are central to the offer, which helps share the benefits of climate action more fairly [6], [5]. The literature also notes that these pathways are conditional, because mission and effectuation create opportunities, but producing climate outcomes depends on institutional support such as policy, finance, and legal forms, on community engagement, and on basic management capabilities [3], [5].

In sum, the literature shows that sustainopreneurship for climate action is diverse yet convergent, since cause driven entrepreneurs use effectual processes to build green technologies and community anchored services, while institutional gaps and capability deficits are common bottlenecks, and outcomes cluster around mitigation, adaptation and resilience, and inclusion. These patterns motivate a conceptual framework that explains how problem sensing and mission alignment move through venture processes and stakeholder interfaces to climate relevant outcomes, which supports testable propositions and policy design.

III. METHODOLOGY

This study uses a structured literature review to examine how sustainopreneurship supports climate

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action. Major databases, including Scopus, Web of Science, Google Scholar, IEEE Xplore, SpringerLink, ScienceDirect, JSTOR, ProQuest, SAGE Journals, SSRN, and EconLit were searched. Items published mainly in the last 10–15 years were focused, while keeping earlier
foundational works when needed. Searches combined terms such as sustainopreneurship, sustainable entrepreneurship, environmental entrepreneurship, effectuation, green technology, circular economy, waste, water, climate action, mitigation, adaptation, resilience, and climate justice.

Inclusion criteria required a clear link between entrepreneurial activity and climate outcomes. Eligible items reported at least one climate-relevant dimension, such as mitigation, adaptation and resilience, or justice and inclusion, and were published in reputable peer-reviewed outlets or recognized proceedings. We excluded items on corporate CSR without an entrepreneurial venture, purely policy commentary without an entrepreneurial lens, studies not connected to climate relevance, and materials outside the time window unless foundational.

Screening was two stages. We reviewed titles and abstracts for relevance, then read full texts that passed the first stage. For each study we recorded context, method, intervention type, climate outcome, and noted barriers and enablers.

The review is qualitative. A meta-analysis was not suitable because measures and outcomes varied widely. We applied thematic coding aligned to the conceptual framework: problem sensing, mission orientation, effectuation-based processes, community anchoring, institutional interfacing, and climate outcomes. An audit trail documented search strings, screening choices, and code updates.

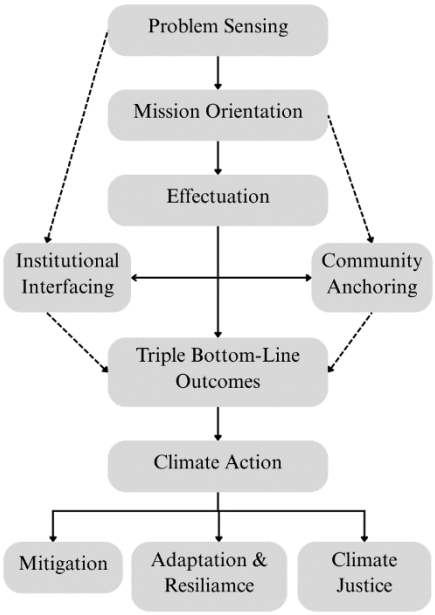
IV. CONCEPTUAL FRAMEWORK

This paper views sustainopreneurship as entrepreneurship that aims to solve sustainability problems and that is guided by a cause or mission, which sets it apart from general venturing [2], [7]. The framework starts with problem sensing. Local environmental and social pressures are read as entrepreneurial opportunities. Mission alignment then directs this sensing into effectuation-based venture processes that use available means, accept affordable loss, make use of contingencies, and build partnerships. Prior studies link these steps to sustainopreneurial practice [2].

Two contextual forces shape whether these processes create impact. The first is the institutional setting. Policies, finance, legitimacy, and culture can enable or constrain action. Evidence from Sri Lanka points to competition with non-sustainable firms, weak policy support, high prices, and attitudinal barriers. Suggested responses include tailored funding and legal recognition [5]. The second is community anchoring and capabilities. Research on water providers serving low-income settlements in Kisumu shows commercial fragility due to limited business skills and strategy. Recommended remedies include registration, training in marketing, finance, and record keeping, and the digitization of operations [6].

Fig. 1. Conceptual Framework

When effectuation is supported by conducive



institutions and strong community anchoring, ventures produce triple bottom line outcomes that combine economic, environmental, and social value [2]. These outcomes connect to climate action through three routes. The first is mitigation through cleaner production and green technologies. The second is adaptation and resilience through more reliable and accessible services, such as water. The third is climate justice and inclusion by keeping services affordable and participatory for low-income users. Over time, these outcomes feed back into problem sensing and can also prompt institutional adjustments that recognize the role of entrepreneurs in commercialization, which policy debates often overlook [2].

V. DISCUSSION

This discussion explains how sustainopreneurs turn climate problems into mitigation, adaptation and resilience, and justice outcomes, which aligns with the conceptual framework. It does not repeat study details. It focuses on the main mechanisms, which are problem sensing, mission orientation, effectuation, community anchoring, and institutional interfacing, and on the conditions that shape their results. The synthesis draws on cases in green technology, water and waste, and grassroots settings, and it reflects the current state of the field [3], [4].

A. Problem sensing and mission orientation

Studies across settings show that sustainopreneurs first notice local environmental and social pressures, such as gaps in energy or water, and interpret them as

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opportunities for action [2]. A mission that centers on "business with a cause" guides which problems they address and shapes later choices about sustainability goals [7]. In climate work, a clear mission keeps mitigation or resilience as a design rule and lowers the risk of drifting toward purely commercial aims as the venture grows [1], [2].

B. *Effectuation under uncertainty*

Climate challenges are complex, and contexts often change. For this reason, sustainopreneurs commonly use effectuation, which starts from what they have, sets an affordable loss, uses contingencies, and builds partnerships [2]. Effectuation supports the mission. The overall goal, such as expanding clean water access, stays fixed, while the path is adjusted through co-creation with stakeholders, pilots, and pivots. This pattern appears in green technology commercialization and in service delivery, where quick learning and recombining resources are necessary [1], [2].

C. *Community anchoring for adoption, resilience, and justice*

Community anchoring is the joint work of defining needs, designing solutions, and building local capability. It is often needed for lasting climate results. In Kisumu, small water providers improved access and affordability for low-income residents, which supported adaptation and equity. At the same time, many providers were commercially fragile because registration, record keeping, and marketing skills were weak, so formalization, training, and digitization were recommended [6]. Across studies, anchoring raises adoption, lowers transaction costs, and directs benefits toward vulnerable groups, which supports climate justice.

D. Institutional interfacing and scaling:

Links to policy, finance, and legitimacy decide whether innovations scale. Common barriers are unsupportive or fragmented policy, higher relative prices than conventional options, and low public awareness [5]. Helpful measures include recognition and legal forms for hybrid ventures, targeted finance, and information platforms that lower adoption frictions [5]. Prior work also notes that policy often focuses on invention and pays less attention to the entrepreneurial task of commercialization. Active institutional interfacing, such as public-private partnerships, standards, and procurement, helps turn prototypes into broad climate impact [2].

E. *How mechanisms work together to produce climate outcomes:*

These mechanisms form an iterative path. Problem sensing, guided by mission, starts effectual processes that gather means and partners. Community anchoring improves the fit between solutions and context and helps share benefits fairly. Institutional interfacing removes system barriers and embeds solutions in wider structures. The outcomes then fall into three climate action routes. The first is mitigation through cleaner technologies and circular practices [2]. The second is adaptation and resilience through reliable and affordable service delivery under environmental stress [6]. The third is justice through affordability, participation, and access for low-income groups [6], [5]. The evidence map by sector, context, and outcome shows that these routes appear often, while the strength of each mechanism varies by setting.

F. *Boundary conditions and contextual variation:*

Three conditions appear often. The first is policy. Supportive rules and incentives help scaling, while policy gaps require entrepreneurs to build coalitions and engage in advocacy [5]. The second is capability. Where managerial and digital capabilities are limited, ventures need support through training and digitization to keep services affordable and effective [6]. The third is market awareness. Low awareness of sustainability lowers willingness to pay and slows adoption, but mission-consistent communication and work with trusted partners can help [5]. These factors change how strongly the links in the framework operate, so the same design can lead to different climate outcomes across contexts.

G. *Implications:*

For research, the framework points to tests of mechanisms. One question is whether community anchoring moderates the link between effectuation and outcomes when policy is weak. Another is whether enabling legal forms mediate the path from mission to scale. For practice and policy, the review suggests levers such as recognition regimes, blended finance, skills and digitization programs, and evidence platforms that reduce frictions at each stage. Overall, the literature supports sustainopreneurship as a process that depends on context. Mission-driven effectuation that is anchored in communities and linked to institutions is more likely to achieve climate action at scale.

TABLE I
CONNECTING SUSTAINOPRENEURSHIP TO CLIMATE ACTION

Proposition	Statement
P1: problem sensing → opportunity	Strong sustainability problem-sensing capabilities increase the identification and pursuit of high-impact mitigation or adaptation opportunities by sustainopreneurs.
P2: mission orientation → outcomes	A clear sustainability mission is positively associated with climate outcomes (mitigation and justice), by steering strategic choices toward environmental and social goals alongside economic aims.
P3: effectuation → innovation/resilience	Under high uncertainty, effectuation (means-driven experiments, affordable loss, partnership building) yields more innovative and resilient climate solutions than predominantly predictive planning.
P4: community anchoring × outcomes	Ventures with deeper community anchoring achieve greater improvements in adaptation/resilience and equitable access than otherwise similar ventures lacking such anchoring.

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P5: institutional interfacing → scale	Active interfacing with policy and finance (e.g., recognition, procurement, public–private partnerships) accelerates scaling and amplifies mitigation impact.
P6: context moderation	Supportive policy, higher capabilities, and greater market awareness *amplify*, while policy voids and capability deficits *attenuate*, the positive effects of p1–p5 on climate outcomes.

VI. CONCLUSION

This review brings together the literature on sustainopreneurship to show how mission-driven entrepreneurs turn observed sustainability problems into climate outcomes. Across green technology and community service settings, four linked mechanisms appear often: problem sensing, mission orientation, effectuation-based venture creation, and the pair of community anchoring and institutional interfacing. Community anchoring helps local fit and fairness, while institutional interfacing supports scale through policy, finance, and legitimacy [2], [6], [5]. Together these mechanisms lead to three groups of outcomes: mitigation, adaptation and resilience, and climate justice [2], [6], [5]. The strength of these links depends on context, in particular policy settings, capability endowments, and market awareness, which explains differences across places [3], [4].

This paper adds a conceptual framework that links these mechanisms into a clear path from problem sensing and mission alignment to climate outcomes and it brings attention to the often-overlooked role of entrepreneurs in commercializing climate solutions [2]. By organizing the evidence by theme and setting out propositions, the framework advances work at the intersection of entrepreneurship and climate action. It connects effectuation to climate performance, positions community anchoring as a driver of resilience and justice, and points to the moments where institutional engagement matters for scale. For policy and education, the synthesis highlights practical levers such as recognition regimes, blended finance, training and digitization, and ecosystem links that can lower known frictions and raise the chance that sustainopreneurial solutions reach real climate impact [6], [5]. In short, sustainopreneurship appears as a process that depends on context, in which mission-driven effectuation that is locally anchored and connected to institutions is more likely to deliver climate action at scale [1], [7].

Further Research

Future research should test the framework with clear measures for problem sensing, mission orientation, effectuation, community anchoring, and institutional interfacing [3]. Scholars should run comparative studies across policy settings and income levels to estimate how context changes the size of effects [5]. Longitudinal and mixed methods can link effectual behaviors to mitigation, adaptation and resilience, and justice results over time [2]. Quasi-experimental designs that use policy changes or staged program rollouts can support stronger causal claims [5].

Studies should also test which capability supports, such as training and digitization, most improve viability in grassroots service models [6]. Finally, updated reviews should refresh the evidence map and report shared metrics so results can cumulate across sectors and regions [3], [4].

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