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Sustaining the Paradigm: Sustainability as Technocratic Soteriology and the Demand for Post-Anthropocentric Re-Foundation

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Abstract. This paper contends that contemporary sustainability largely functions as a self-stabilizing adjustment within the very metaphysical architecture that produced ecological and social breakdown. Framed by Western modernity's anthropocentrism, instrumental rationality, and a teleology of linear progress, sustainability becomes a therapeutic practice of managerial mitigation—what I term *technological eschatology*—promising redemption through optimization and control. Far from re-founding first principles, mainstream approaches preserve them, treating symptoms while the crisis logic endures. The analysis proceeds in four moves: a critical genealogy of sustainability's concepts and institutions; a reconstruction of modernity's tripartite metaphysics (man, nature/place, technology); an assessment of internal sustainability strands alongside AI as a paradigm case of technological eschatology; and a constructive post-anthropocentric reframing that foregrounds Islamic cosmology's concepts of *tawḥīd*, *mīzān*, *khilāfa*, and *amāna*. From this follow actionable criteria—sufficiency over efficiency, non-negotiable limits (planetary and moral), justice (distributional and intergenerational), and virtues of restraint and care—and governance tests repositioning technology from salvific *telos* to accountable instrument. The contribution is diagnostic, normative, and practical: only by re-founding ends can tools be rightly ordered.

1. Introduction

This paper argues that contemporary sustainability largely functions as a self-stabilizing adjustment within the very metaphysical architecture that produced the socio-ecological crisis—anthropocentrism, materialism, coloniality, and a teleology of infinite progress. From the Brundtland Report's growth-friendly formulation to present ESG regimes, "sustainable development" has habitually translated planetary care into metrics, markets, and managerial protocols that rarely interrogate their own first principles.[1] Sustainability's dominant logics thus inherit—and often entrench—the disenchantment and instrumental rationality that Max Weber identified as constitutive of modernity.[2]

The central thesis is that sustainability, as theorized within Western modernity, has become a form of *technological eschatology*—anticipating redemption through optimization, prediction, and control.[3] In Heideggerian terms, the world is disclosed as *Bestand* (standing-reserve), ordered by the enframing (*Gestell*) of technics; sustainability then refines this enframing rather than displacing it.[4] Today, artificial intelligence stands as the apex of this promissory technics, amplifying prediction markets and data extraction while obscuring value judgments behind the rhetoric of optimization.[5] Far from neutral, AI participates in a political economy of

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"surveillance capitalism" with nontrivial material footprints—features that complicate its green aura.[6]

The paper's intervention is to propose a post-anthropocentric, theologically literate reframing that binds technology to non-negotiable moral limits and redefines human freedom as stewardship rather than mastery. While multiple traditions resource such re-foundation, the paper foregrounds Islamic cosmology's concepts of *tawḥīd* (unity), *mīzān* (balance), *khilāfa* (stewardship), and *amāna* (trust), which articulate obligations to creation irreducible to calculus or convenience.[7] The argument proceeds in four moves: a critical genealogy of sustainability; a reconstruction of modernity's tripartite metaphysics; internal and external critiques treating AI as a paradigm case; and a constructive post-anthropocentric alternative with criteria for policy and design. The wager is simple: only by re-founding ends can tools be rightly ordered.

2. Methodology and Research Design

The study adopts three complementary methods. First, a *critical genealogy* of the sustainability paradigm treats "sustainable development" as a historically situated formation rather than a neutral ideal, tracking how problem-definitions, metrics, and expert discourses sedimented from conservationist debates through Brundtland into ESG regimes.[8] Second, a *conceptual analysis* reconstructs modernity's metaphysical architecture across three interlocked dimensions—man (anthropocentrism, temporal imaginaries), nature/place (objectification, disenchantment), and technology (instrumental reason)—drawing on Weber's disenchantment and Heidegger's *Gestell*.[9] Third, a *comparative framework* stages external critiques and constructive alternatives from non-Western resources, with particular emphasis on Islamic cosmology and stewardship ethics alongside work in comparative philosophy of technology.

Three analytical lenses organize the inquiry. Philosophy of technology interrogates the purported neutrality of tools and systems. Political economy situates sustainability within industrial capitalism and colonial extraction, showing how ecological externalities and uneven development are structurally produced rather than accidental. Environmental humanities provide categories to parse modern spatial-temporal experience—Relph's *placelessness* and theories of social acceleration—that help explain why "green" optimization often intensifies rather than relieves crisis logics.[10] The focus is on paradigms and logics, not a comprehensive policy survey. The contribution is *explanatory-normative*: it clarifies why mainstream sustainability remains structurally complicit, and articulates criteria for a post-anthropocentric reframing that binds technology to non-negotiable ethical limits.

3. Sustainability: Concept, Evolution, and Problem-Setting

Definitions and dimensions. In its canonical formulation, "sustainable development" meets the needs of the present without compromising future generations' ability to meet their own needs—a definition expanded by subsequent scholars to include culture as a fourth pillar.[11] Competing schools turn on how substitutable nature and capital are: *weak sustainability* allows natural capital to be offset by human-made capital, whereas *strong sustainability* treats certain ecological stocks as non-substitutable. Allied debates pit green growth (decoupling) against degrowth and post-growth proposals that doubt absolute decoupling at the required speed and scale. The circular economy reframes production-consumption through restorative loops yet struggles with rebound effects. ESG translates sustainability into investor-facing metrics; meta-analyses find heterogeneous links to financial performance and mixed evidence for real-world impact.[12] The proliferation of reporting frameworks can institutionalize incremental improvements while leaving underlying growth imperatives intact.

Historical evolution. Intellectual roots reach from conservation movements to *The Limits to Growth* (1972).[13] The Brundtland Report (1987) mainstreamed the term and bridged North–

Materials Research Proceedings 72 (2026) 523-533 https://doi.org/10.21741/9781644904336-51

South agendas; Rio 1992 institutionalized global targets; and the SDGs (2015) broadened scope to 17 interlinked goals. From the 2000s, sustainability became increasingly financialized through ESG ratings and carbon markets, embedding sustainability within market governance. Across these phases, metrics, markets, and management frameworks rose to dominance—features congenial to firms and states but not necessarily to ecological integrity or justice.

The crisis to which sustainability responds. The paradigm addresses overlapping planetary crises: unequivocal anthropogenic warming documented by the IPCC, dramatic biodiversity loss with up to a million species at risk (IPBES), and multiple planetary boundaries nearing or exceeding safe operating spaces.[14] These dynamics take off with fossil-fueled industrial capitalism. World-systems and coloniality scholars show how colonial extraction externalized ecological and social costs, creating asymmetric exchange and path dependencies that persist.[15] Karl Polanyi's "great transformation"—the commodification of land, labor, and money—disembedded economies from social-ecological constraints, institutionalizing growth compulsion.[16] Contemporary crisis is thus the product of a historically specific assemblage: fossil energy, industrial technique, colonial-capitalist political economy, and a modern imaginary of linear progress.

4. Modernity's Metaphysical Architecture: Man, Nature/Place, Technology

Sustainability's dominant imaginaries and instruments do not arise *ex nihilo*; they are incubated within a wider metaphysical architecture that modernity normalized across knowledge, governance, and economy. This architecture can be parsed into three co-implicated registers: a modern anthropology of the human (sovereign autonomy and linear time), a concept of nature/place (objectification, disenchantment, extractivism), and a theory of technology (instrumental rationality, standardization, managerialism). Together, these orient sustainability toward calculative optimization rather than ontological re-foundation.

4.1 Man (anthropology and time). Modernity's anthropocentrism displaces theocentrism, re-seating sovereignty in the rational, self-legislating human. Bacon's experimental program reframed knowing as mastery; Descartes proposed the subject as certain foundation and the world as extended substance available to methodical control.[17] In Charles Taylor's account, such moves coalesce in an "immanent frame" in which meaning and authority are enclosed within human horizons; transcendence becomes optional or residual. A corollary is mind–body dualism rendering the knowing subject disembodied and the world othered as object—predisposing modern science and administration to treat alterity as a problem of measurement and control. Equally decisive is modernity's temporality: the secularization of a medieval-Christian eschaton into linear progress underwrites *technological soteriology*—salvation displaced from grace to technique, from vertical transcendence to horizontal acceleration through optimization and control.

4.2 Nature/place. If the modern subject is autonomous, nature becomes the correlate object. Heidegger names the culmination: modern technology enframes beings as standing-reserve, available for ordering and extraction.[18] Weber's disenchantment registers the loss of sacred presence; Carolyn Merchant reconstructs how a living cosmos gives way to a mechanistic nature open to domination. Polanyi traced how the great transformation commodified land and labor, generating growth compulsion.[19] World-systems analysis maps center–periphery extraction premised on "cheap nature" and systemic appropriation of extra-human work.[20] Place is similarly reconfigured: time–space compression and the logic of speed produce placelessness—supermodern circulation without deep relationality.[21] In short, the modern metaphysics of nature and place has political economy built in: objectification legitimates extraction; disenchantment legitimates dispossession.

Materials Research Proceedings 72 (2026) 523-533 https://doi.org/10.21741/9781644904336-51

4.3 Technology. Within this constellation, technology shifts from *techne*—a poietic, situated craft—to *technics*: standardization, optimization, and industrial scaling. Adorno and Horkheimer generalize the critique as instrumental reason: the Enlightenment's promise of emancipation devolves into domination when cognition is reduced to calculation and control.[22] Ellul adds that technics tends toward autonomy, generating self-augmenting chains of technical necessity indifferent to substantive ends.[23] Langdon Winner's question—do artifacts have politics?—elicits a qualified yes: technical forms embed and reproduce social orders. In contemporary form, these tendencies culminate in managerialism: organizational worlds in which engineering mindsets become the default ontology—problems are what can be modeled; solutions are what can be optimized. *Technological soteriology* names the modern redirection of salvific hopes into a horizon of technical transcendence—singularity, superintelligence, optimization of everything. Sustainability, when uncritical, becomes the liturgy of this faith. Without a different picture of the human, of nature/place, and of technology, sustainability is primed to optimize the crisis rather than interrupt it.

5. The Sustainability Paradigm: Internal Map and Critiques

Within contemporary practice, market-led green growth pursues decarbonization through carbon pricing, innovation, and technological substitution, with techno-optimist variants foregrounding AI for efficiency gains across energy, mobility, and buildings. At the other pole, strong sustainability insists on non-substitutable natural capitals and planetary boundaries, while degrowth and post-growth proposals argue that material throughput must contract in affluent economies to achieve biophysical stabilization with equity. Corporate ESG and impact investing translate sustainability into investor-facing metrics, aiming to align capital flows with climate and social goals.[24]

Notable achievements include mainstreaming of net-zero trajectories, substantial renewable build-out and cost declines, and partial evidence of relative decoupling of territorial emissions from GDP. ESG has diffused disclosure and board-level accountability. Yet the paradigm exhibits recurrent limits. *Rebound/Jevons effects* erode efficiency gains when improved productivity lowers costs and stimulates additional consumption.[25] *Offshoring* shifts emissions along global value chains, making producer-based decoupling appear stronger than consumption-based accounting reveals. *Greenwashing and metric capture* blunt material impact; the large divergence of ESG ratings underscores weak construct validity.[26] *Distributive injustice* persists: both low-carbon transitions (critical minerals, land for renewables) and climate harms exhibit uneven geographies of burden.

Intra-paradigm critiques are sharp. Degrowth scholars contest the "win–win" promise of green growth. Resilience is criticized as responsibilizing communities to "bounce back" while leaving structural drivers—extraction, dispossession, racialized vulnerability—intact. ESG faces charges of financialization: portfolio risk management masquerading as planetary repair. Circular economy strategies encounter thermodynamic limits that temper transformative claims. Both managerial and critical strands remain tethered to instrumentalist assumptions—optimize, measure, manage—and technocratic governance. They solve for coordination inside the very metaphysical and political-economic frame that produced the crisis, risking optimization of the problem rather than a redirection from it.

6. Technology, AI, and Technological Eschatology

6.1 From solutionism to eschatology. Across policy, design, and corporate strategy, *solutionism* casts every social-ecological problem as an optimization challenge solvable by more data, better models, and tighter control. Pushed to its horizon, solutionism matures into technological eschatology—a secular soteriology relocating hopes for salvation from moral transformation to technique.[27] Such a horizon confuses means for ends: instruments can maximize against a given

Materials Research Proceedings 72 (2026) 523-533 https://doi.org/10.21741/9781644904336-51

objective function, but they cannot supply or adjudicate the *ends themselves*. That task belongs to substantive moral and political judgment about what should be valued and limited. When sustainability is absorbed into the solutionist frame, its *telos* risks becoming "more efficient management" rather than reorientation of the human–earth relationship.

6.2 AI as apex of modern technics. Contemporary AI is the operational apex of this technics. At scale, AI amplifies prediction, data colonialism, surveillance capitalism, behavioral governance, and platform concentration.[28] Its material base depends on energy- and resource-intensive cloud infrastructures whose planetary costs are increasingly legible: training and serving large models impose substantial carbon burdens, while critical minerals for hardware link AI to extractive frontiers with well-documented social and ecological costs.[29] Rebound dynamics—"smart" optimization lowering marginal costs and stimulating additional demand—threaten to outpace efficiency gains. AI systems reproduce and scale algorithmic bias; predictive scoring disproportionately burdens racialized and precarious populations.[30] Governance by optimization depoliticizes value choices: key assumptions—which objectives, which trade-offs, whose data—are buried in pipelines and loss functions, presenting political decisions as technical necessities. Current "AI ethics" initiatives often amount to ethics washing without addressing power, extraction, and enforceable limits.

6.3 Why tech cannot be the telos. Tools are means; they presuppose and magnify the ends we select. Without a normative ontology—commitments to stewardship, dignity, planetary limits, and intergenerational justice—capable machines amplify the crisis logic: more extraction, more control, more acceleration. Prediction does not tell us *what is worth predicting*; optimization does not tell us *what is worth optimizing*; scale does not tell us *what must be limited*. As MacIntyre argues, practices are sustained by internal goods and virtues that no technique can generate; detached from those, institutions tend toward external goods of power and profit.[31] A decolonial sustainability must therefore reorder technology from salvific horizon to accountable instrument, governed by prior ends it cannot supply and bounded by harms it must not cross.

7. External Critique: Non-Western Frames and an Islamic Alternative

7.1 Seeing sustainability from outside. Viewed through non-Western lenses, mainstream sustainability reveals blind spots flowing from its tacit universalism. It naturalizes a single metaphysics—the modern, secular, individualist picture of the human—erasing cosmologies in which personhood is relational (Ubuntu), embedded (Indigenous), or cultivated through self-cultivation (Confucian). Confucian eco-humanism understands humans as nodes in a triad of Heaven–Earth–Human; sustainability appears as *becoming worthy* rather than optimizing indicators. African Ubuntu philosophy approaches flourishing as *being-with*—repair, reciprocity, and restraint as constitutive goods rather than external constraints. Indigenous climate justice re-centers relational responsibilities to land and kin; sustainability becomes treaty-keeping and guardianship, not managerial control. Latin American pluriversal design refuses the one-world ontology of growth, inviting distinct cosmo-techniques that re-embed making within place and meaning.[32] These alternatives share a commitment to thick normativity—first principles about what counts as the human, the good, the sacred, the limits—that set the horizon for institutions and tools.

7.2 Islamic cosmology and ethics of stewardship. An Islamic alternative articulates a live normative ontology capable of ordering institutions and tools. At its metaphysical core stands *tawḥīd* (Divine unity): all beings derive from and depend upon the One; reality is not a field for autonomous mastery but a theophanic order. This unity entails *mīzān* (balance/measure)—a divinely set equilibrium that humans must honor: "He has raised the sky and set the balance—so

Materials Research Proceedings 72 (2026) 523-533 https://doi.org/10.21741/9781644904336-51

do not transgress in the balance."[33] Humans are appointed *khalīfa* (stewards) on earth, charged with *amāna* (trust) to keep creation's order and judge justly; wanton excess (*isrāf*) is explicitly proscribed.[34]

In this frame, freedom is redefined as responsible agency under moral law, not the license of domination. Vertical transcendence—humility before a higher sovereignty—counterposes modern linear progress: technique cannot redeem the soul. Technology is subordinated to ethical ends (*maqāṣid al-sharīʿa*): preservation and enhancement of religion, life, intellect, progeny, and wealth in just balance.[35] Sufficiency (*kifāya*, *qanaʿa*) takes precedence over efficiency. Classical doctrines recognized protected zones (*ḥimā*, *ḥaram*) for water, grazing, and habitat; waste and harm are prohibited under *la ḍarar* (no harm) and *ḥisba* (market oversight for public good). Contemporary scholars extend these to modern governance: stewardship obliges intergenerational equity; trust proscribes externalizing harms; limits demand caps and sufficiency policies rather than perpetual throughput.[36]

This alternative does not reject tools; it reorders them. AI may serve monitoring or allocation if and only if it is embedded within ethical authority, transparent accountability, and prior limits—it cannot supply the ends it must obey. Islam's cosmology provides first principles (unity, balance, stewardship, trust, limits) that answer precisely where mainstream sustainability is thinnest: not a romantic past nor a technocratic future, but a normative present—a way to make and govern that binds power to purpose.

8. Constructive Reframing: A Post-Anthropocentric Sustainability

8.1 Normative commitments. A post-anthropocentric sustainability begins by de-centering human entitlement and acknowledging intrinsic value in non-human creation—a basic ontological claim: ecosystems, species, and places possess worth irreducible to human utility. Aldo Leopold's land ethic remains exemplary: humans are "plain member and citizen" of a biotic community, and moral considerability extends to soils, waters, plants, and animals.[37] Hans Jonas's *imperative of responsibility* follows: the enlarged causal reach of modern technology imposes duties toward distant others, future generations, and the biotic world—some thresholds (extinction risks, irreversible harms, planetary boundaries) are not negotiable under cost–benefit calculus.[38] Sustainability must accordingly replace managerial optimization with *stewardship* and *care*: a fiduciary duty to protect, restore, and transmit a more-than-human inheritance, oriented to the flourishing of interdependent beings rather than the maximization of aggregate outputs.

8.2 Criteria and governance. Translating these commitments into practice requires criteria that reflect ends, not just means. *Sufficiency over efficiency*: Thomas Princen argues that meeting needs "within enough" is the only logic aligned with ecological reality, since efficiency without sufficiency triggers rebounds and scale effects.[39] *Limits*: coupling planetary boundaries with moral limits—no species sacrifice, no sacrifice zones—operationalized in Raworth's "safe and just space."[40] *Justice*: distributional, recognitional, and intergenerational—from environmental justice's analysis of uneven burdens to duties to future generations.[41] *Virtues as operational criteria*: mercy, justice, truthfulness, and temperance understood as public capacities guiding institutional design and professional practice, not private sentiments.[42] *Place and dwellability*: design against placelessness by restoring attachment, legibility, and care for the *genius loci*.[43]

These ends demand institutional translation: a precautionary principle shifting the burden of proof when plausible serious harm looms; liability for externalities through polluter-pays instruments; commons governance for shared resources drawing on Ostrom's design principles;[44] and stewardship charters embedding duties and consent.

8.3 Technology repositioned. Technology must move from *telos* to instrument. Before deployment, technics should pass four tests: a *Purpose test* (*why do it?*—linking to higher goods

such as biodiversity protection or sufficiency); a *Limit test* (*how far?*—respecting biophysical and moral thresholds); an *Equity test* (*who benefits/costs?*—with ex ante protections for vulnerable communities); and a *Care test* (*who/what is protected?*—ensuring living systems and places are not treated as expendable). Applied to AI, this repositioning entails: transparency and contestability for value-laden choices;[45] energy and compute caps aligned with climate goals;[46] data sovereignty and anti-extraction protocols;[47] alignment with sufficiency (prioritizing demand reduction, habitat monitoring) rather than consumption stimulation; and prohibitions on optimization that monetizes harm—surveillance capitalism, manipulative behavioral targeting, and extractive platform lock-in. As Jonas cautions, when the scope of possible harm expands beyond precedent, prudence must rule over prowess.[48] Reframed this way, sustainability ceases to be the therapeutic wing of modern technocracy and becomes a normative project: ordering economies, designs, and tools toward *enoughness*, justice, and the durable habitation of places.

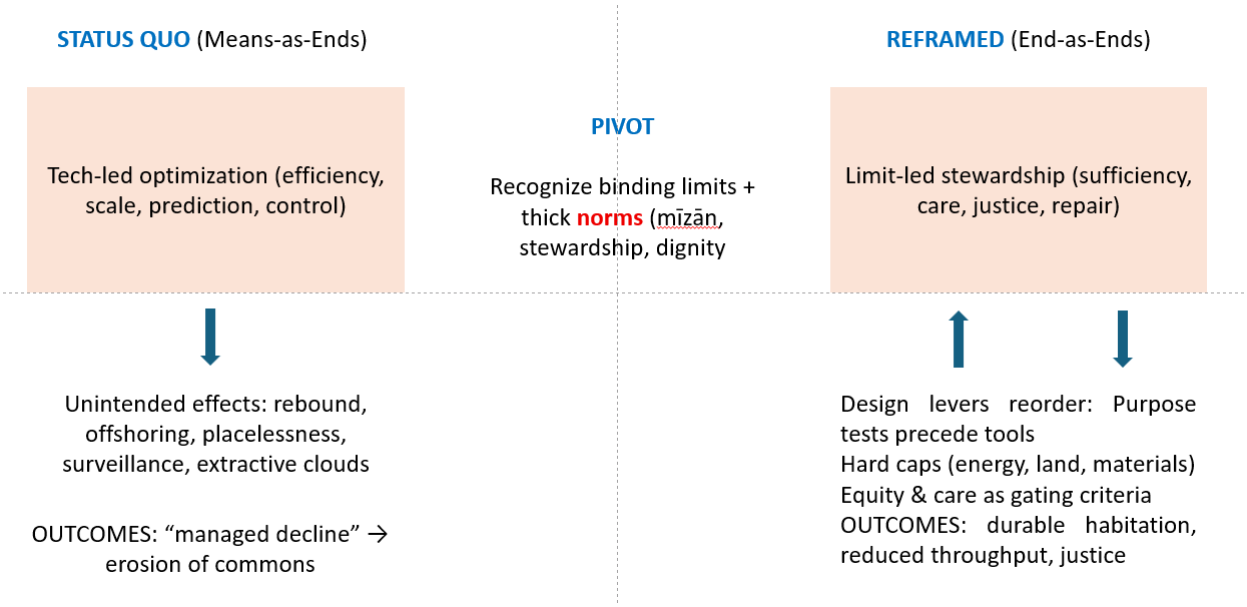

Figure 1 — *From Tech-Led Optimization to Limit-Led Stewardship Conceptual flow, schematic*

9. Policy, Design, and Practice Implications

The normative reframing advanced above is not an abstract philosophical exercise; it carries direct institutional consequences. If sufficiency, stewardship, and non-negotiable limits are to function as constitutive ends rather than rhetorical gestures, they must be embedded in the material grammar of cities, economies, and computational systems. The following implications translate the post-anthropocentric framework into concrete guidance across four domains: urban design and architecture, economic policy, governance, and AI governance.

Urban/architectural. In hot-arid and mixed climates, inward-oriented typologies—courtyard housing, shaded passageways, compact blocks—reduce heat gain, enhance privacy, and create low-energy microclimates; their logics are well documented in Islamic and vernacular urbanism.[49] Incorporating climate-fit materials with high thermal mass and low embodied energy further cuts lifecycle impacts. At the urban scale, prioritizing walkability over speed—mixed uses, calmed traffic, human-scale frontages—links to mode shift, safety, and health. Local circularity (urban mining, building component reuse, materials passports, neighborhood repair spaces) keeps value in place and reduces throughput. Place-repair requires design for legibility, enclosure, and care, re-stitching streets, squares, courtyards, and ecotones that invite dwelling.

Materials Research Proceedings 72 (2026) 523-533 https://doi.org/10.21741/9781644904336-51

Economic. Where throughput already exceeds ecological ceilings, post-growth and degrowth pathways targeting sufficiency within planetary boundaries are warranted, focusing on provisioning systems—housing, mobility, food—that meet needs without aggregate expansion. Repricing externalities via carbon and material excises internalizes climate and biodiversity costs. Public funds should seed repair/reuse commons and shared fabrication infrastructures; a "performance economy" selling service rather than stuff aligns firms with durability and maintainability.

Governance. Embed moral limits in law: hard caps for biophysical ceilings, no-go protections for critical habitats, and non-compensable bans on sacrifice zones. Establish participatory stewardship councils for local resources drawing on polycentric governance with clear rules, monitoring, and graduated sanctions.[50] Planning and conservation should recognize non-market value—sacred sites, cultural landscapes, and biodiversity as ends in themselves—within statutory appraisal and compensation regimes.

AI governance. Align computational infrastructures with climate and justice aims through energy/emission budgets for training and inference, lifecycle reporting, and siting on low-carbon grids.[51] Create public-interest compute (shared research clouds with open auditing) to reduce duplication and private lock-in. Adopt enforceable "do-no-harm" standards for high-impact models—environmental and distributive impact assessments, meaningful human oversight with contestability and redress.[52] Require Purpose, Limit, Equity, and Care tests for AI in the built environment. These measures re-order practice: design for enoughness, govern for commons and care, and treat technology as accountable instrument—not *telos*.

10. Conclusion

This paper has argued that much of contemporary sustainability functions as technological eschatology: a managerial soteriology promising redemption through optimization, prediction, and control, thereby treating symptoms while leaving intact the metaphysical architecture—anthropocentrism, disenchantment, and technocratic reason—that generated the crisis. In Ellul's terms, the technological system becomes self-augmenting, conferring necessity on whatever is technically possible; "greener" tools rarely unsettle the ends they serve.[53] Nor do managerial adjustments meet the ethical threshold implied by Jonas's imperative of responsibility, which demands categorical limits when the scale and irreversibility of harm exceed precedent.[54] Meanwhile, planetary boundaries are not advisory but binding; exceeding them cannot be offset by efficiency, markets, or metrics.[55]

If sustainability is to deliver genuine socio-ecological flourishing, it must be re-grounded in first principles that de-center human entitlement, affirm intrinsic value in the more-than-human world, and bind technology to non-negotiable limits. Leopold's land ethic offers one anchor; virtue traditions construe practical reason as ordered to goods internal to practices rather than to aggregate outputs.[56] Raworth's "safe and just space" gives a pragmatic frame for coupling social foundations to ecological ceilings—but only if sufficiency and restraint replace throughput expansion as the default *telos*.[57] In line with pluriversal and religious cosmologies, sustainability must recover thick normativity—stewardship, trust, balance—that disciplines technique rather than defers to it.[58]

The work ahead is twofold: *rebuild the axioms*—articulate a post-anthropocentric, limit-bound ontology of the human and the earth, and a virtue-inflected ethics of care and justice; then *build tools to fit those ends*—redesign institutions, metrics, and technics (AI included) so that purpose, limit, equity, and care are constitutive constraints, not ex post audits. Without this inversion of primacy—from means to ends—"sustainability" will remain an eloquent name for managed decline.

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