

Strong Sustainability by Design

SUSTAINABILITY COMMONS



Strong Sustainability by Design - Version 1 (Draft)

Request for Input

Public comments are invited on the first version of ***Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions*** that identifies specific issues and pragmatic recommendations regarding sustainability and climate change to achieve “Planet Positivity” by 2030.

This draft compendium has been created by committees of the Planet Positive 2030 Initiative¹ that is supported by IEEE Standards Association (IEEE SA). The Planet Positive 2030 Initiative community is composed of several hundred participants from six continents, who are thought leaders from academia, industry, civil society, policy and government in the related technical and humanistic disciplines. At least one hundred fifty members of this community have contributed directly and have worked to identify and find consensus on timely issues.

The document’s purpose is to identify specific issues and candidate recommendations regarding sustainability and climate change challenges to achieve “Planet Positivity” by 2030, defined as the process of [transforming society and infrastructure by 2030 to:](#)

- Reduce GreenHouse Gas (GHG) emissions to 50% of 2005 emissions by 2030²
- Significantly increase regeneration and resilience of earth’s ecosystems³
- Be well on the path to achieving net zero GHG emissions by 2050 and negative GHG emissions beyond 2050
- Continue to widely deploy technology as well as design and implement new technological solutions in support of achieving technological solutions designed and deployed to achieve “Planet Positivity”

In identifying specific issues and pragmatic recommendations, the document:

- Provides a scenario-based challenge (how to achieve “Planet Positivity by 2030”) as a tool to inspire readers to provide contextual technical and general feedback as part of this RFI.
- Advances a public discussion about how to build from a “Net Zero” mentality to a “Net or Planet Positive” (“do more good”) societal mandate for all technology and policy.
- Continues to build a diverse and inclusive community for the Planet Positive 2030 Initiative, prioritizing the voices of indigenous and marginalized members whose insights are acutely needed to help ensure technology and other solutions are valuable for all. Of keen interest is how we can encourage more in-depth participatory design in our processes.
- Inspires the creation of technical solutions that can be developed into technical standards (IEEE Standards Association, for example ICT and power & energy related standards, IEEE P7800™ series) and associated certification programs.
- Facilitates the emergence of policies and regulations; regulations that would potentially be interoperative between different jurisdictions (countries).

¹ Planet Positive 2030 is part of [The Sustainable Infrastructures and Community Development Industry Connections program](#)

² As described in the [United Nations Climate Change Conference \(COP 21\) Paris Agreement of 2015](#).

³ According to the [High Ambition Coalition for Nature and People](#), “In order to address both the biodiversity crisis and the climate crisis, there is growing scientific research that half of the planet must be kept in a natural state....experts agree that a scientifically credible and necessary interim goal is to achieve a minimum of 30% protection by 2030.” Protection for land and water of “30 x 30 by 2030” was recommended during COP15 United Nations [Convention on Biological Diversity](#).

By inviting comments for *Strong Sustainability by Design*, the Planet Positive 2030 community provides the opportunity to bring together multiple voices from the related scientific and engineering communities with the general public to identify and find broad consensus on technology to address pressing environmental and social issues and proposed recommendations regarding development, implementations and deployment of these technologies.

Details on how to submit public comments are available in the [Submission Guidelines](#).

Comments in response to this request for input will be considered by the Planet Positive 2030 Initiative committees for potential inclusion in the first public edition of *Strong Sustainability by Design* (“*Strong Sustainability by Design*, First Edition”) anticipated to be made available to the general public during the fourth quarter of 2023.

- For further information, learn more at the [Planet Positive 2030 Initiative website](#).
- For our Frequently Asked Questions (beyond RFI submission), [please click here](#).
- Get in touch at: PlanetPositive2030@ieee.org to get connected to a committee or any other reason.
- Please, [subscribe to our newsletter here](#).

If you’re a journalist and would like to know more about the Planet Positive 2030 Initiative, please contact: Standards-pr@ieee.org

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Disclaimers

Strong Sustainability by Design is not a code of conduct or a professional code of ethics. Engineers and technologists have well-established codes, and we wish to respectfully recognize the formative precedents surrounding issues of sustainability and the professional values these codes represent. These codes provide the broad framework for the more focused domain addressed in this document, and it is our hope that the inclusive, consensus-building process around its design will contribute unique value to technologists and society as a whole.

This document is also not a position, or policy statement, or formal report of IEEE or any other organization with which is affiliated. It is intended to be a working reference tool created in an inclusive process by those in the relevant scientific and engineering communities prioritizing sustainability considerations in their work.

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A Note Regarding Recommendations in This Document

Strong Sustainability by Design is being created via multiple versions that are being iterated over the course of two to three years. Planet Positive2030 is following a specific concurrence-building process where members contributing content are proposing “candidate” recommendations so as not to imply these are final recommendations at this time. This is also why the word, “Draft” is so prominently displayed.

Our Membership

Planet Positive2030, an initiative supported by the IEEE Standards Association as part of the Industry Connections Program, [Sustainable Infrastructures and Community Development program](#) (SICDP) currently has more than 400 experts involved in our work, and we are eager for new voices and perspectives to join our work.

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Sustainability Commons

Future Vision

It is 2030. The sustainability commons is now the go-to platform, a digital knowledge commons, for all things ClimateTech. It is always up to date thanks to an engaged contributors' base and is easily accessible by all stakeholders around the world, facilitating discovery and adoption of climate solutions and enabling climate action decisions. Content is easily verifiable, and information about its quality is well captured, making the content trustworthy.

People have access to valued, contextualized sustainability knowledge that is easily understood, can be trusted, and may be adopted to enable the planet to get to net zero and thrive over the long term.

Sustainability knowledge is only important when put into use. Having and sharing knowledge is a foundation of influence and, therefore, of power to lead change. Desert communities in the Sahara have shared their clean energy, water, food solutions and best practices with great success. Communications technologies for the arctic areas have been greatly advanced and shared on the commons to support better access to health care, education, and sharing resources. The progress made in achieving the Positive Planet 2030 vision has been possible by deploying effective models of knowledge and expertise sharing that has empowered communities to benefit from collective know-how worldwide.

Technology itself enabled an effective governance and organization model for the *sustainability commons*—a dynamic, ever-changing, contextualized sustainability data, information, knowledge, and solutions tool available online for communities to access, share, and adopt to enable the planet to thrive in the long term.

A key enabler of the Commons took place in the mid-2020s when mechanisms like Decentralized Autonomous Organizations, or DAOs⁴, began to proliferate in response to the growing concern over the lack of regulation regarding emerging technologies such as those involved in Generative AI and the Metaverse. Rather than address these issues top down, countries, companies, and individuals around the world demanded personal data protection as represented in key laws like the European Union General Data Protection Regulation (GDPR⁵), enabled with 'personal agents' that functioned at an algorithmic level to represent all people's individual identity, data, and choices at the same speed and context of algorithms.

The commercial web of early Internet data brokers, driven in large part by advertising, gave way to real-world, digital, and virtual communities whose members voted on projects with genuine agency, including the prioritizing of protecting the planet and all people above short-term profit and growth. This led to the greatest proliferation of innovation in modern times, where it was only by fostering caring communities where all people knew their votes and voices counted that our modern sustainability commons was born.

⁴ From, [DAOs could hold the answer to better data governance guidelines](#). Dan Connor, Venture Beat: May 8, 2022: "In a DAO, contributors vote on the direction of projects, creating a feedback loop that doesn't currently exist in AI-driven systems. Rather than simply honing complexity into simplicity, by asking humans whether they accept the internal decisions, DAOs bend the arc of data models toward community centrality."

⁵ <https://gdpr.eu/>

Commons that don't list IPCC or Paris Agreement goals are immediately not trusted both in smaller or internationally oriented DAO⁶ type settings.

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⁶ <https://www.investopedia.com/tech/what-dao/>

Introduction

Definition of sustainability commons

A digital sustainability commons refers to a dynamic mapping of who is doing what and where, in all climate and sustainability related technologies.⁷ The commons will be made available to all to enable and increase visibility of solutions and best practices, ultimately allowing governments, businesses, civil society organizations, and individuals to make the most effective decisions based on their circumstances.

Elinor Ostrom described the sustainability commons as “long-enduring, self-organized, and self-governed.”⁸ Ostrom was an American political economist who won the Nobel Memorial Prize in Economic Sciences in 2009. She was known for her work on the governance of common-pool resources, such as forests, fisheries, and water systems. Her book is considered a seminal work in the field of institutional analysis and the management of common-pool resources². In this book, Ostrom presents case studies of successful management of common-pool resources by communities around the world and proposes a set of design principles for the institutions that govern these resources. On page 58 of the book, Ostrom discusses the importance of “local knowledge” in the management of common-pool resources and argues that it is often more effective than external expertise or formal regulations.

Part of building the commons will be to highlight the requirements to sustain the commons over time, as well as its organization and governance mechanisms. The commons would be expert vetted and organized with proper contextualization on relevant climate technologies and how they could be leveraged for the query at hand to help various stakeholders to decarbonize their sectors/industries.

Beyond the sharing of knowledge, the sustainability commons could be a platform to help gather information, regardless of whether this information is readability available (open source).

The sustainability ecosystem consists of numerous academics, corporate leaders, policy makers, regulators, activist groups, and others who might have differing agendas, follow different frameworks and methodologies, and make claims/counterclaims that are difficult to verify. The sustainability commons will create a trusted and verifiable framework; methodology; catalog of models, tools, and platforms; and an appropriate governance for the different stakeholders to contribute to, build on, and verify the claims. As an outcome of this initiative, the sustainability commons will evaluate metrics, rewards, business models, ownership, funding, resourcing, curation, and governance using other similar examples (e.g., Wikipedia, open-source communities, and distributed autonomous organization [DAO] models).

⁷ A 2022 McKinsey Sustainability article identifies “ten families of climate technologies” and explains: “Most climate technologies are viable only if other climate technologies are also implemented at the level of facilities, enterprises, regions, or value chains.” See Bernd Heid, Martin Linder, and Mark Patel, “Delivering the Climate Technologies Needed for Net Zero,” McKinsey Sustainability, 18 Apr. 2022, Retrieved 7 Sep. 2022, from <https://www.mckinsey.com/business-functions/sustainability/our-insights/delivering-the-climate-technologies-needed-for-net-zero>.

⁸ Ostrom, Elinor. *Governing the commons: The evolution of institutions for collective action*. Cambridge university press, 1990, pg. 58.

Issues:

Issue: Thinking in silos: Currently, sustainability knowledge and information is spread over a large number of stakeholders, each of them thinking and acting in their own ecosystems and disciplines. Information flow between these thematic and geographic areas, therefore, could be enhanced, to help with a faster uptake of sustainability solutions. This problem, however, is not limited to scientific disciplines; it can also be found with gender-balance concerns, inclusion of local/Indigenous groups, and consideration for the big picture of environmental, social, and governance issues within the sustainability fields.

Issue: Long-term viability: Lots of commons-aligned projects, especially with a heavy focus on knowledge commons, tend to have a model of grant- or subsidy-funded operations. This model, however, can become a challenge in the long term as the projects are dependent on a constant funding stream from public entities, philanthropies, and other well-intentioned donors. Along those lines, the platform and overall project will have to prove its worth in the long run: through strong and coherent metrics, an innovative business model, shared ownership between all members of the sustainability commons, and other specific proof of the efficient use of resources.

Issue: Free flow of knowledge and expertise: In the sustainability commons, where different points of view and diverse solutions to common problems are encouraged, ensuring the integrity of content and platforms becomes crucial to prevent greenwashing, marketing, or other dubious activities. This balance between free-flowing knowledge and responsible content moderation is essential.

Fortunately, a key opportunity comes from EU regulation focused on climate and nature-based goals coming into effect in 2024 (Nature Restoration Law⁹) with similar US reporting needs coming from the SEC¹⁰ whereas companies would be required to disclose their climate-related risks, such as the impact of climate change on their business operations and supply chains.

Greenwashing, or "greenwashing," arises from intentional or unintentional misrepresentation of company activities related to climate and planetary issues. To counter this, the concept of unified cooperation for stakeholder benefit and distributed cooperation becomes essential in the context of sustainability commons. Unified cooperation fosters collaboration and authentic action, promoting transparent reporting and knowledge sharing. Distributed cooperation recognizes the need for collective action across diverse actors, integrating different perspectives and expertise. By leveraging these approaches, the sustainability commons serve as a platform for shared resources, innovation, and collective problem-solving, empowering stakeholders to implement sustainable practices and contribute to a greener future.

Issue: Common language: Potential contributors to the sustainability commons will come from a variety of disciplines and geographies, each with its own language and terminology. The more different fields are gathered in one shared information space, the more important it will be to have a coherent and agreed set of concepts, definitions, and terms, representing the same idea in different areas of work. Setting up a commons-wide ontology will be crucial to support this issue. Also critical to this issue is the recognition that

⁹ https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en

¹⁰ <https://www.sec.gov/news/press-release/2022-46>

certain indigenous and other traditions have oral cultures as key means of communication, which beyond being honored provide the opportunity to recognize non-Western ideals of a Commons to be explored and proliferated as part of the examination of a sustainability commons overall.

Issue: Shareable and verifiable data and models: Currently, various sustainability models have been built for specific domains and specific countries at different levels of granularity. These sustainability models have different sets of assumptions and different types of data sets, making verifiability of claims and the modular development of models a significant challenge. Having a hyper-catalog of data sets, a modular model architecture, and a repository for contributing, sharing, and building sustainability models will be a critical component of sustainability commons.

Issue: Governance: As a public good, the sustainability commons need to adopt a governance model that respects voices from a variety of contributors and supporters—in terms of both the strategic direction of the overall commons and the curation and related decisions. Existing governance models might not even fit this type of activity, giving this effort the chance to invent or deploy innovative models instead.

Recommendations

The following recommendations will help initiate building a sustainability commons initiative as envisioned in this chapter. These recommendations comprise both process guidelines and design principles.

Map existing initiatives: A key starting point will be to understand existing initiatives and the sustainability commons regarding climate technology. As a result, examples from universities, research centers, corporations, governments, startup accelerators, and others will be needed to recognize gaps in the existing landscape, learn lessons from prior attempts to address this need, and identify partners for implementation. A model worth mentioning is Shareholder Commons¹¹ where companies band together to address climate issues for the greater good, a form of "stakeholder" capitalism that could be more sustainable for a majority of stakeholders than just one small group of shareholders.

Build a global repository with multi language support: A true sustainability commons should be global by design, which means building in support for different languages from the beginning. But for this commitment to be truly global, the design should go beyond multilingual support to include building tools and an architecture that can be customized for various contexts by communities.

Design to empower distributed communities: The governance and ownership of such a sustainability commons should strike a balance to be both as inclusive as possible and retain effective decision-making. Therefore, all stakeholders should be empowered, whether individuals or communities, and control should not be centralized. Various organizational and technological designs should be tested to achieve these objectives. For example, new technologies should be explored, such as setting up a DAO or working with more established legal structures (e.g., data trusts¹²).

¹¹ <https://theshareholdercommons.com>

¹² <https://climateactiondata.org/>The Climate Data Trust is a data trust that was established in 2020 to help communities and businesses adapt to climate change by sharing data on climate change impacts and solutions. The trust has already been used to support a number of projects, including a study on the impact of sea level rise on coastal communities and a study on the effectiveness of renewable energy projects.

Accessible to maximize engagement: The design of a sustainability commons should encourage the growth of a network of contributors, as well as incentivize engagement by both contributors and consumers. Therefore, tools need to be in place for two-way interaction with the commons for access and contribution of content.

Optimizing for discoverability of relevant content: Facilitating the discovery of relevant content must be critical to ensure the commons will be useful (and adopted) for potential users (customers). To do so, best practices should be employed to increase discoverability of data and content, as well as to build on ideas of gamification.

Feedback loops and pathways for adoption: A sustainability commons is only as useful as the solutions it helps deploy. Therefore, building simple pathways for adoption (how can content be linked to problem solving) and the right feedback loops (has content helped solve problems) must be considered.

Build on what already exists: The sustainability commons should leverage existing efforts, not reinvent a new solution. Likewise, when it is operational, it should facilitate sustainability innovation, enabling more reuse and rediscovery of existing solutions rather than reinvention and duplication.

Start with a focus: The organization(s) building a sustainability commons should focus on a specific area or problem sets as a starting point to build out a pilot and iterate before scaling it up further. This process could be determined by the organization launching such efforts in collaboration with first clients. The starting point should be carefully selected to showcase the potential for a technology commons by identifying an area that has both sufficient resources and demand (areas such as carbon removal or renewable energy).

Incentives are key for uptake: A sustainability commons should be designed to encourage discovery, deployment, and documentation of content for reuse. The same principle applies to the design of products, processes, and incentives through the commons.

Quality control and content review: Users need to trust that the content is genuine and ideally have value-added data that provide information or a rating on technologies, data, and documents in the sustainability content. Therefore, finding ways for users to receive existing metadata or reviews, as well as value-added assessments of content, is important.

Technological Insights and Candidate Recommendations

This space is intentionally left blank to encourage technically oriented feedback for public Request for Input.

References, case studies, and additional resources

- California Climate Commons
<http://climate.calcommons.org/>
- Carbon Disclosure Project
<https://www.cdp.net/en>
- Climate Action 100+
<https://www.climateaction100.org/>
- Community Climate Collaborative
<https://theclimatcollaborative.org/>
- Crane 2021 User Report
<https://www.primecoalition.org/library/crane-2021-user-report>
- Crowdsourcing Sustainability
<https://crowdsourcingsustainability.org/>
- Design for Change
<https://www.designforchange.us/>
- Earth Journalism Network, Climate Commons
<https://earthjournalism.net/projects/climate-commons>
- Future Earth, Knowledge-Action Networks
<https://futureearth.org/networks/knowledge-action-networks/>
- Global Climate Action
<https://climateaction.unfccc.int/>
- International Carbon Action Partnership
<https://icapcarbonaction.com/en/ets>
- IPCC links
<https://www.ipcc.ch/links/>
- Oxford Climate Tech Initiative <https://kumu.io/Cocosavie/oxford-climate-tech-initiative-rd-crowdsource-systems-mapping-launching-april-8-skoll-world-forum-ecosystem-day>
- Real Time Crowdsourced R+D Systems Map
<https://kumu.io/Cocosavie/oxford-climate-tech-initiative-rd-crowdsource-systems-mapping-launching-april-8-skoll-world-forum-ecosystem-day>
- Shareholders Commons
Theshareholdercommons.com

- UN Environment Programme (publications and data)
<https://www.unep.org/publications-data>
- Climate Mapping for Resilience and Adaptation
<https://resilience.climate.gov/>
- Wikipedia list of climate action initiatives
https://en.wikipedia.org/wiki/List_of_climate_change_initiatives
- WWF Climate Crowd
<https://wwfclimatecrowd.org/>

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