

Feedback for Strong Sustainability by Design

Thank you to everyone who provided insights and feedback for the first version of ***Strong Sustainability by Design: Prioritizing Ecosystem and Human Flourishing with Technology-Based Solutions***.

We wish to thank all the contributors below who took the time to review and provide insights for the first draft of [Strong Sustainability by Design](#). Contributors were kind enough to follow [our submission guidelines](#) and their insights have all been shared with the committees working to update their chapters.

It should be noted this document / feedback represents the kind and thoughtful insights of people submitting on their own outside of the [Planet Positive 2030](#) directly. While Planet Positive 2030 is an initiative of The IEEE Standards Association, this document and any comments don't formally represent IEEE SA.

Please click on a name to go directly to that feedback item. Names and affiliations are listed as received.

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- [Thomas Kibalo, prior CEO KibaCorp, affiliation IEEE Baltimore Region](#)
- [William Mattingly](#), Professional Civil Engineer, Land Surveyor, Master of Public Administration
- [Dr. Manijeh Motaghy](#), Organizational Psychologist, UCLA Mindfulness Teacher, Founder & Guiding Teacher at Perfectly Here
- [Michele Chilanti](#)
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Planet Positive 2030 Comments - Tim Taylor

Tim Taylor, Roper Mountain Science Center, Greenville County Schools

As an Environmental Science Major and an Environmental Science Chair at a science center with Greenville County Schools teaching mostly grades 1-7, I thought the issues addressed connect with standards and topics we try to address here through our lessons and in our exhibits. Glad I got to glance at this compendium and thanks for all your hard work.

Planet Positive 2030 Comments - Thomas Kibalo

Thomas Kibalo, prior CEO KibaCorp, affiliation IEEE Baltimore Region

1. The Ocean and Coasts list of Issues p.22, the following appears twice.

Issue: Ubiquitous presence of micro- and macro-plastics in the ocean

2. Metrics / Indicators list of Issues: p.16, p.88 Metrics development begins first and foremost by respecting Nature and from that premise proceed to understand and capture the metrics that are essential.

My suggestion is to use a different word other than just “honor.” I suggest something more direct, for instance: Metrics development begins first and foremost by respecting Nature and from that premise proceed to understand and capture the metrics that are essential.

3. Future Vision It is 2030 p.30

Greenhouse gas (GHG) emissions are significantly reduced....

Today

This document is a call to action. The guidelines, case studies and issues contained in this document capture a complex interdependent framework for recovery that is doable, but to achieve the future vision of 2030, 2050 and beyond, requires immediate engagement by all without delay to make these future visions a reality.

For my above comments I draw from what is stated on p.47 FYI Reference to Guiding Principle 4—Mitigation and adaptation

Time is of the essence. According to a UN Intergovernmental Panel on Climate Change (IPCC) report finalized on April 4, 2022, to limit warming to 1.5 °C, global GHG emissions should peak before 2025 and be reduced by 43% by 2030. Methane must be reduced by 34% by 2030. Even if we are willing to tolerate warming of 2 °C, global GHG emissions must peak before 2025 and be reduced by 27% by 2030.⁸⁹

Planet Positive 2030 Comments - Bill Mattingly

William Mattingly, Professional Civil Engineer, Land Surveyor, Master of Public Administration
Retired Public Works – Utilities Director, Cave Creek, Arizona

August 8, 2023

Strong Sustainability by Design: Rivers and Lakes

General

As I read through the document, I was impressed and somewhat overwhelmed by the breadth of issues tackled. It strikes me as a daunting task to attempt to master the subjects and to summarize. Ultimately, my comments are intended to help clarify and to offer some minor edits.

Page 208

Comments:

~~Issue: Humans treat water as an endless resource that causes unnecessary waste, especially in regions where water is scarce or is under threat of becoming so.~~

However, Water Managers are acutely aware that this is not the case. The difficulty is developing policies and regulations that encourage sustainable water use.

For example, in 1980 Arizona passed the Groundwater Management Act. The legislation was a compromise hammered out by key stakeholders: municipal utilities, industrial, agricultural, cattle and mining. The negotiations were overshadowed by the US Department of the Interior's threat to halt the construction of the Central Arizona Project. The Central Arizona Project is a major canal which brings Colorado River water to Phoenix, Tucson and other areas of the state.

"The 1980 Groundwater Management Code (Code) has three primary goals, to:

1. Control severe overdraft occurring in many parts of the state.
2. Provide a means to allocate the state's limited groundwater resources to most effectively meet the changing needs of the state; and
3. Augment Arizona's groundwater through water supply development.

To accomplish these goals, the Code set up a comprehensive management framework and established the Arizona Department of Water Resources (ADWR) to administer the Code's provisions. The Code established three levels of water management to respond to different groundwater conditions:

The lowest level of management includes general provisions that apply statewide.

The next level of management applies to Irrigation Non-Expansion Areas (INAs).

The highest level of management, with the most extensive provisions, is applied to Active Management Areas (AMAs) where groundwater overdraft is most severe.

The Code created four AMAs - Phoenix, Pinal, Prescott, and Tucson."

Within the AMA's new development the availability of a 100-year water supply must be demonstrated.

This is not the case outside the AMA's and it is those areas of the state where the lack of regulation is creating shortages.

<https://cals.arizona.edu/news/arizona%E2%80%99s-groundwater-management-%E2%80%93-past-present-and-future>

<https://www.usgs.gov/special-topics/water-science-school/science/how-much-water-there-earth>

https://new.azwater.gov/sites/default/files/media/Arizona%20Groundwater_Code_1.pdf

Page 218

Comment:

This is a great overview of the U.S. water resource issues.

"3. Heggie, Jon. "Why is America Running Out of Water?" National Geographic Science, 12 Aug. 2020."

Page 223

Comment:

Good, succinct history of water infrastructure development in the U.S.

“8. Sedlak, David. “How Development of America’s Water Infrastructure Has Lurched Through History.”
Pew, 3 Mar. 2019.

Page 234

Comment:

1. The agricultural industry ~~needs to be educated and incentivized regarding growing native crops~~ **should be encouraged and incentivized to innovate and experiment with native crops which are better adapted to the climate** (i.e., farmers need to avoid planting water-thirsty crops in water-stressed regions).

Page 235

Comment:

1. ~~Evidence exists that F~~ farmers are **very much** aware of this issue and are taking measures to address it.

Page 242

Comment:

3. **The best available technologies should be employed to treat wastewater to near-drinking water standards. This can be achieved by using various, currently available** advanced filtration technologies, such as a membrane bioreactor, a moving bed biofilm reactor, integrated fixed-film activated sludge, granulated activated carbon, and ~~exonation_~~ **ozonation**.

Planet Positive 2030 Comments - Manijeh Motagy

Dr. Manijeh Motaghy, Founder & Guiding Teacher at Perfectly Here

(Editorial note: Dr. Motaghy sent two submissions; both are included here for ease of reading. They pertain to the overall document and to chapter 10 specifically).

The following are some feedback to consider.

From where I stand, vision, mission, core values, goals, and objectives must be clear and realistic with descriptions that support them.

I find two issues with the first goal: “**Transform society and infrastructure to achieve Planet Positive 2030. That means:** Reducing GreenHouse Gas (GHG) emissions to **50%** of 2005 emissions by 2030 and significantly increasing regeneration and resilience of earth’s ecosystems; effectively to be well on the path to achieving net zero GHG emissions by 2050 and negative GHG emissions beyond 2050, that is, **to be planet positive.**”

1. The goal: “**Transform society and infrastructure to achieve Planet Positive 2030,**” suggests the transformation of two elements to achieve this goal. *Society and Infrastructure*. The description of the goal, however, covers only one of these elements, which is the infrastructure, providing solutions to reduce greenhouse gas and increasing earth’s regeneration and resilience of its ecosystems. It gives no clear indication of changes and the means for the transformation of society. How will this goal help transform the society at large to transform its ways of life, perception of ownership, rights to choose, embodying ethical considerations in their consumption, and creating well-being for all? Is this a lofty goal that we do not want to touch and hope that when systems of production and regulations are improved that people will have to change? What about the responsibility of the average citizen, who is most of the 8 billion people on the planet and the generations to come? Would they remain loyal to creating positive systems? If we’re merely relying on technology and industrial reform, then what is the role of the Guiding Principles and Human Wisdom and Culture chapters in achieving the two goals? I understand PP2030 has originated from IEEE, a tech company,¹ with capabilities in understanding and producing tech solutions. But this project has called upon all disciplines and can utilize other resources to make PP2030’s desired impact.
2. Without clear Core Values and Principles, people can continue ideating, innovating, and implementing causing even more wicked problems. What are the core values of our project as a whole? There may be some that are implied, embedded within each chapter’s work, assumed because we all mean to do good. But it would be much more powerful to clearly define and state them upfront. This is not to stifle great ideas, but to give direction, where direction might get lost on thinkers, innovators, and implementers.

My Recommendations:

1. If you do see transforming the society, including those who have large-scale impact as well as individual perspectives, teaching them values of care for life on earth, helping them change their ways of life to create the desired changes and prevent future careless innovation, and lifestyles, I’d recommend we clearly set this precedent in our history. I would separate the goals from the objectives of the goal, provide core values that promote partnership and a culture of care. My suggestions also include clearly stating the vision, mission, core values, goals, and objective as below.

Vision: Planet Positive 2030

¹ Note inserted by feedback publication team: IEEE is a not-for-profit professional organization that engages exclusively in educational and scientific activities, which benefit the profession and the public. IEEE is the world’s largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE is not a company or a corporation.

Mission: Transform society and infrastructure to achieve Planet Positive 2030.

Suggested Core Values: Efficiency or Regeneration, Transdisciplinary, Equity, and Non-harming

**** (Note: one or more focus group sessions can be formed to create shared core values. I will be more than happy to volunteer to facilitate such a discussion, as I have done many for many organizations, groups, and individuals.)**

Goal #1: Transform society to achieve Planet Positive 2030. That means: Transforming the society and stakeholders' (e.g., innovators, designers, manufacturers, farmers, investors, and the average citizens) perspective and approach to living to one of respectful partnership with the planet and adopting a culture care and stewardship for planetary resources.

Goal # 2: Transform infrastructure to achieve Planet Positive 2030. That means: Identifying the current technological solutions that need to be deployed widely as well as technology gaps for which we need to design, innovate, and deploy new technological solutions to reach Planet Positive 2030.

Objectives:

- 1) To help human society understand the issues and solution, their part in it, become inspired to collaborate in saving our shared planet.
- 2) To achieve reduction in GreenHouse Gas (GHG) emissions to **50%** of 2005 emissions by 2030 and significantly increasing regeneration and resilience of earth's s ecosystems.
- 3) To effectively be on the path to achieving net zero GHG emissions by 2050 and negative GHG emissions beyond 2050, that is, **to be planet positive**

I believe these clarifications are essential for every chapter and those who implement them to consider both societal transformation as well as technical and industrial. i.e., Towns & Cities in particular points to improving/transforming buildings, structures, maps, and infrastructures that shelter, organize, and provide for the needs of humanity. That means that humans are involved at every stage, both design and implementation as well as using and benefiting from these resources and services, as such they also must be responsible in order to create fairness, equity, care and maintenance, and continuity of best practices.

Chapter 10: Human Wisdom and Culture – SDBD-07-final

Page 11

Missing transitional content between paragraphs 3 and 4.

Recommendation:

To add something like this to the end of 3rd paragraph on page 11 to connect with the next idea.

“As humans became aware of their environment and understood that environment provided what they needed to sustain their lives, they developed a caring relationship with Earth and other natural forces and resources. For over 70,000 years Aborigines of Australia practiced this caring relationship with nature and passed the wisdom to their future generations.”

Paragraph 4 – May portray that it assumes there are only Aborigines and no one else left who care for the earth.

While Aborigines are the oldest civilizations, there is wisdom and care for the planet by many other ancestors and regions of the world, e.g., the Persian culture who is deeply imbedded with nature, celebrates every seasonal change, setting the calendar year based on seasons, planting, harvesting, believing in the responsibility to maintain life for future generations, honoring the origin of life, and birth, etc. Or the Chinese, Japanese, and other Asian cultures and tribes who have tremendous wisdom about nature, mother earth, and sustainable living.

Recommendation:

Continuing with the above recommended transition, paragraph 4 may say something like:

“Indigenous wisdom and lifestyles are not exclusive to Aboriginals. As humans migrated to new areas on Earth, they created their own ways of life and consumption, which may not have been in accordance with the ways of the Aboriginal ancestors. Maintaining a culture of respect and care for nature is understood and implemented by many people around the world. However, somewhere along the timeline of human history, humans began to dominate, take, and consume as they wished with no consideration or knowledge of planetary limitations. They lost touch with the wisdom of how ecosystems work and the necessity for care and stewardship to enable regeneration. Hence, disrupting planetary balances and the chain of life.”

This, I think, has a good transition to the paragraph “In the last 10,000 years....”

Planet Positive 2030 Comments - "Cities and Towns" - Michele Chilanti

Michele Chilanti

I've read with great interest one of the chapters of the white paper. I picked the chapter about Towns and Cities.

First, I'd like to express my appreciation for the initiative: I have an engineering background - I graduated in Microelectronics many years ago and I've spent my entire career in technical roles in IT. There is no doubt that this paper can stimulate the more technical minds to look at the broader ramifications of technological innovation, and to find ways to put technology to work to increase sustainability.

It greatly helps that the paper points to a very wide array of credible sources and studies.

There are a few things that I'd like to point out.

Coming from an engineering background, and having spent several decades in the corporate world, I was expecting a more intense focus on quantitative aspects, especially when it comes to recommendations.

Some of the questions that I felt were left unanswered are:

- What is the quantifiable impact of each recommendation?
- What is the monetary cost of each recommendation?
- How long would it take to implement each recommendation?
- How long will the effects of that implementation take to materialize?

Clearly, once you associate numbers to recommendations, it would become easier to prioritize them. I find it somewhat unrealistic that some sections list over a dozen recommendations, especially when one considers that we are talking about a 6 years (or so) horizon. Focusing on a few impactful and achievable "big hitters" might be a more effective approach than pursuing a larger number of perhaps less critical action items.

I fully understand that not every one of the authors has a deep background in environmental science: perhaps the paper should state that one of its objectives is to engage people with that kind of expertise, so that the recommendations can be vetted and prioritized.

Two more things - totally personal and subjective:

- Some of the language used in the paper sounds "ideological:" there are references to deep societal and cultural changes such as "humanity abandoning competition in favor of cooperation," to make an example. It is possible that these statements might be construed by detractors as evidence that the initiative is ideologically motivated, or that they will alienate potential contributors.

- I haven't seen a chapter on the topic of population management. I know it's a delicate topic, but I think - and I am not alone - that the fact that human population has exploded from around 1B to 8B individuals in the last 150 years is an undeniable and conspicuous component of the "sustainability equation." While many countries are experiencing a decline in birth rates, some of the geographic areas that are still displaying significant growth are those that are least prepared to sustain it. I think that a frank discussion on this topic would be a valuable addition to the paper.

I would like to thank you again for the opportunity to read and learn, and to provide feedback.

Planet Positive Comments 2030 - Manfred Bürger

Manfred Bürger, Stuttgart, Germany, physicist, retired leader of nuclear reactor safety department at IKE - Inst. Nuclear Energy, Univ. Stuttgart

August 2023

The importance of this initiative cannot be doubted. It is special just by being introduced by a technical organization linked with the task to provide technical standards. Just from this, it can be realized that technological development is meanwhile urged to pick up social responsibility. This is especially caused by devastating consequences which resulted from it in the past, while significant economic and social progress is to be remarked, in parallel. Positive and negative impacts can be expected also from the new high technology development in the future—probably in intensified manners—and require deep consideration not only by technical experts but also by the public. Therefore, the input for general discussion given by the IEEE initiative is to be highly supported. Especially, from the impacts of the study and the discussion, concrete measures and societal initiatives and changes are to be derived as well as in general adequate societal organisation to meet the environmental and technical challenges.

My comments especially refer to the points of concrete measures and societal initiatives. With this respect, my view is that the study and its impact need further elaboration and pointing (similar to what I commented to the previous IEEE initiatives of “Ethically Aligned Design”, e.g., in *rfi responses document* on ead v1 in 2017 and *ead_v2_feedback_rfi_responses*, 2018). I share the vision outlined or at least indicated in the report, with goals to establish sustainability for society and nature, highlighted in general (Chapters 1–4, 11) and for different areas of concern (Chapters 5–10, 12). However, the visions themselves and especially the ways to reach them (already until 2030!) remain rather vague. Both, visions and ways claim strong sustainability to be established by design. In the subtitle of the report technology-based solutions are emphasized as means to yield prioritizing of ecosystems and human flourishing. Of course, this can also be understood as a demand on choosing adequate technical options as support for this purpose. However, in the report, I largely miss the necessary outlines about such choices and their relation to visions and ways. In order to explain my concerns and indicate ways to overcome them, I cannot just try to introduce modifications or corrections concerning single aspects or chapters but must use overall considerations.

Frequently in the report, the planetary limits to current growth rates are addressed and therefore transitions to a new economical orientation deviating from growth goals are claimed. I totally agree with this, but just therefore miss discussions about ways to go in this direction, about goals to organize production (what and how to produce), about societal solutions) and techniques which may be used as support. Ways to organize energy supply, traffic, health system, consuming options, living in cities and rural areas, etc. require more concrete visions, with emphasis on cooperative solutions (indicated several times in the report, but mostly in a very general manner). My impression is that the demands written in red color at the end of every sub-chapter on technically oriented feedback (“Technical Insights and Recommendations”) express the lack of discussion in the report about the relation of technical and societal solutions, under general emphasis on sustainability visions.

Improvement of single products appears to be in the foreground in the report (e.g., in the chapters considering metrics—see also my former critiques in this respect mentioned above). In my view, this is not the key for reaching a sustainable production and society. This can be illustrated e.g., concerning cars and traffic. Improving the efficiency for fossil-driven cars reduces the specific consumption of cars, but the increase of car power and traffic increases the total fuel consumption. The significant contribution of increasing transport of goods under economic growth is also to be questioned. Replacement by electric cars may yield local reduction of emissions but strongly increases the need for electric energy, to be delivered by renewables.

This example highlights the requirements of sustainability concerning energy as well as in general natural resources. Replacing fossil fuels for energy supply means to go to renewables, mainly to solar and wind energy, i.e., finally to cover the whole energy needs by producing electric energy. Using hydrogen or synthetic fuels means to derive these from the electric energy (under significant losses in production as

well as transport). Since such energy forms are still required for technical processes as steel and cement production and in the chemical industry, also for planes, their use for other processes, e.g., normal traffic or heating of buildings (as replacement for natural gas), must be strongly limited. Under the wording of technological openness also nuclear energy, fission or fusion, is propagated again as perspective, the latter being far away from realization, the first being in world perspective far below the needs (< 2-5% of total primary or end energy need in the world) and would require large production and financial efforts to become relevant, then running into safety and resources problems by the sheer amount of plants and worldwide distribution.

On the other hand, replacing all fossil energy with electric energy from renewables will strongly increase the requirements for solar and wind energy. To reach this as a basis for sustainable solutions will hardly be possible by only increasing their amount. Reduction of energy use must be an essential part of the necessary efforts. For years, scenarios indicate—without significant change—that to completely replace fossil energies with renewables in highly industrial countries requires about doubling of their contribution with simultaneous decrease of energy use by ~ 2/3. The present status is that the whole world use of energy (primary or end energy) is covered by fossil energies (oil, gas, coal) with more than 80% (in Germany still about 80% in 2022, compared to 86% in 1990). The goal in the EU is until 2030 to increase renewable energy delivery by 40% while reducing consumption of primary and end energy by 36–39%.

Such reductions of use are often considered as possible via technical efficiency increase. I do not see that this path has worked, essentially due to the rebound effects connected with increased total consumption driven by inherent capitalist forces which drive growth of production and consumption. Tim Jackson has outlined this in detail in his book *Prosperity without Growth*, 2016. He also shows convincingly in this context that absolute decoupling of production growth from energy use as well as use of material resources and finally of emissions does not work. A key argument is that a separation of—richer—parts of countries is not justified due to increasing parts of products from external sources; this can be seen in evaluations of the footprint of products and invalidates messages as e.g., given in EU report “Fit for 55” (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0550>) about reached decoupling growth from CO₂ emissions. Ideas of green or sustainable production growth appear thus as unrealistic.

The problems with attempts to combine production growth and sustainability are further increased by the massive need of rare materials in the transformation to the electricity system (as well as overall in the high technology development), as e.g., lithium and cobalt, the need for solar panels, wind turbines constructions and especially for batteries. These materials are mostly only exploitable by methods harmful to the environment and the societies concerned. Although human exploitation is indicated throughout in the report, together with exploitation of nature, more and special emphasis may be put on the exploitation and harm concerning poor countries. Their economic problems, largely caused by economic dependence and exploitation, drive them to a different position about care for nature and sustainability. This needs more specific considerations about stopping such harms and support to enable sustainability thinking in these countries and include them in a planet positive perspective.

In general, all these problems are usually wiped away in the ideas of progress completely relying on technical means. Usually, this line is pursued by liberal and growth-oriented economic representatives who require openness for technical development against needs to give lines of development by the state with rules concerning use of technologies and demands to push energy saving technologies as well as respective societal solutions (by organizing reductions of individual traffic, requirements concerning emissions, transfer from fossil-driven cars and devices to electric ones, measures to replace fossil heating devices in buildings). In Germany, the experiences in trying to quit the path of using fossil energy even by first relatively modest steps, e.g., replacing fossil heating in buildings, is that strong conflicts in society arise, related to the confrontation of the different political lines, visions of societal development and views about the role of state and of course the related costs.

I realize, as said above, that in the Planet Positive report, a basic line of visions is given which goes beyond such limitations. But, the real problems and the different views about development need more consideration in order to overcome them. Especially, the real problems in realizing the visions promoted

should be considered in concretizing the ways to go. This concerns the new technical means which can be used as well as their limitations and especially concrete considerations about societal solutions. Otherwise there is a risk that—under the visions of a sustainable society—technical developments and applications are supported which do not fit these visions.

Taking the traffic example, electric cars may contribute to an overall perspective but are counterproductive if just replacing the fuel-driven cars without change to a basically public traffic system. The same concerns self-driven cars as mass products designed for dense traffic. The necessary reduction of use of energy and materials implies instead the consequence of reduction of car production. Both, reduction of individual use of cars as well as the resulting reduction of car production can be done in a way which even improves living quality by relaxing environmental stresses, stresses in traffic-crowded cities, and unnecessary amounts of production work.

Against the latter, it is argued that the economy collapses if production and thus economic growth is reduced. Indeed, the present economy is based on respective capital utilization and thus produces corresponding forces which act against the orientation of production at senses of living, at needs and interests to realize good living. Thus, the conflict cannot just be wiped away. I miss discussion about this in the report. The question is how we can construct ways of transition realizing that the present way of living under orientation at production growth is not sustainable and goes more and more into conflict with nature and also societal welfare. Of course, transition to other work with a sense for society is to be considered in this frame.

Within such transformation perspectives, the financial side also needs consideration, not only because of the resulting conflicts about costs (see above about Germany), which finally should require considerations about wealth distribution. Further, the transition to a caring society, as envisaged in the report, needs considerations about the required technical and economic basis for this, i.e., about production of necessary or desired goods, goods also necessary for international exchange.

In the report, the ways of living in a growth-oriented society are clearly considered as unsustainable. The attempt to initiate changes is to promote positive visions of other living, thus to initiate interest and motions in this direction. I am afraid that this will not work without concretizing visions and ways. This must be done bottom-up, locally, as well as top-down, in a regional and interregional perspective. Already the need of supraregional nets for balancing energy variations from renewables illustrates the latter. Decentralization alone will not work. This is also valid for other subjects.

Bottom-up initiatives can promote a shift in mindset towards sustainable concepts and innovations about the kind of living, shifts in human perceptions and perspectives and also contribute to real reorganization of production and society in the perspective of sustainability, as e.g., indicated on **p. 82** of the report concerning businesses that promote and implement regenerative approaches or on **p. 91** with the link to Copenhagen's waste system. Repair café and fair trade movements could be added here with their practical as well as educational and prospective impacts. Various further examples can be mentioned, e.g., to be found on the web under wellbeing cities, in the EU report "The future of cities" (also cited in the report in Chapter 7, "Towns and Cities", **p. 266**, together with various other reports), also in various other IEEE reports.

Some examples are given in the Chapter "Metrics/Indicators". However, I do not see the gain of applying measuring methods about effects. The major gains are from changes in views and behavior. Corresponding changes in the education system—as indicated on **p. 91**—must also emphasize qualitative changes, basically processes of understanding our complex world. Technical means as simulations can help for this, not measuring learning and behavior. It would be of interest to indicate which simulations of realistic scenarios are considered in the recommendation on top of **p. 92**—the general reference to metaverse concepts is for me too less specific to qualify the use. Correspondingly, the reference on "computer gaming simulations" is too general for the purpose of the report (adding "serious" does not help).

The concept of smart cities promoted in the report appears to oscillate between societal solutions and technical orientations, without developing clear lines about relations, between walkable cities and emphasis on implementation of robotics and systems of automatic cars (e.g., p. 272). Although expressing objection against profit and growth orientation, everything appears to be possible: green options, welfare of society, broad application of new techniques as support or part of new lifestyles, also connected to growth. This reminds me of the Fraunhofer concept of “Ultra-efficiency” (www.igb.fraunhofer.de/en/about-us/cooperation/the-ultra-efficient-factory-producing-without-emissions.html) of reintegrating factories in cities, also giving a picture of combining everything, there by unrealistic ultra-efficiency.

Mostly the report addresses bottom-up approaches, top-down ones only in a very general way. However, we also need to push top-down ways. Thus, I miss discussion about the approaches in the EU of the Green Deal as well as about the Inflation Reduction Act in the States as major investments of states claiming ways to a sustainable future. I miss critical consideration as well as considerations about how to push such programs in the desired way, how to use them, etc.

In my view, we need approaches as Mariana Mazzucato promoted concerning mission-oriented procedures of states in general and for the EU FP9 research program (literature cited under Metrics/Indicators in the report, especially p. 100, as favorable framework). In my view, large investment programs to push the process to a sustainable world should be strongly supported and driven in the right direction. Steering by the state in an indirect way, more or via financial stimulations, restrictions or limitations of use, pricing, etc. is not sufficient. Mazzucato demands mission-oriented investments and their controlled performance. She shows that key technological revolutions have also in the past been driven by public funding. The present technological revolutions or disruptions need steering towards sustainable ways and structures. Otherwise, uncontrolled disruptive and destructive processes will prevail.

The present Green Deal program of the EU realizes the need (as probably also the Inflation Reduction Act) but appears to remain in classical intervention ways, not organizing large mission-oriented processes. I think that such missions should be organized in a joint way in all relevant fields, such as traffic, energy, use of digital and AI tools, education, and of course also in finding good solutions for the migration problems. As an example, organizing good public traffic EU-wide by an effective combined system may be considered. Being included in such missions, in principle, all countries would help in joint development and interest in it, as a signal for progress, rather than favoring disruptive processes. By giving positive perspectives such projects would also act against widespread uncertainties which yield a basis for right extremism which claims solutions in backwards direction, separation instead of cooperation. Such an overall perspective would be in agreement with the positive signal the report obviously wants to give with the title Planet Positive. I think considerations as given above should be picked up and further elaborated and outlined for concretization.

Major discussions about lines to pursue are about the role of state and economy. As Mazzucato outlines, there is need of directly steering the development—especially during transformation phases—by the state in mission-oriented ways. This must be based on support and active participation by the society which highlights the importance of bottom-up actions and education. Considering these perspectives in the report more explicitly would be important.

As another remaining unclearness in the report, I mentioned above the relation of necessary societal changes and use of technical means. I considered improvements of single products with respect to sustainability as less important than reduction of use. Such a perspective also needs further discussion, rather than the more general indications about technical support given in the report. In my view, the development of high technology (biotechnics, gene technics and overall IT and AI technologies) can be characterized essentially by systemic approaches, yielding a combination of different firms and areas, organizing the interrelations. Computers and in general digital processes with their simulation possibilities about complex problems yield a basis for understanding and handling. Thus, the systemic approach pushed by technology and economy provides in principle ways to find joint, combined, interconnected solutions in all fields rather than separating constructions, i.e., also a basis for interconnected,

cooperative societal solutions, easily seen concerning traffic. Since technical and economic tendencies drive in this direction, this should not only be taken as a key possibility to promote organization in the sense of capital gain but instead of organization societal welfare, including the perspective to orient away from growth and towards a caring society. Such a perspective could even support abilities for international competition, not only as a way to fix the severe environmental problems. It could be a means to generally drive toward sustainable solutions. This would then be the major impact and chance given by technology. It should be considered as this in the report.

It remains to consider that the large investments stated as necessary in the perspective of development towards sustainability and especially an extended application of technical means, also digital ones, require much energy and materials in contrast to the urgent establishment of sustainability, with finally reduction of growth. However, this cannot be avoided, but only moderated by an accelerated transformation and by looking at reduction potentials also during the process of transformation.

The financial efforts combined with these transformation efforts are also to be considered. They are huge, considering in addition the need for social adjustments, but may be taken as a basis for future welfare of society, thus also economically justified, even if financed by debts. Of course, redistribution of wealth is also to be considered as an option, which finally is also a need for a sound, sustainable society, not threatened by social disruptions.

I hope that the report and the impact it should give can gain by taking up some of my above considerations.

Planet Positive 2030 Comments - Submitted by Dimitrios Kalogeropoulos

The Role of Telehealth in Enabling Sustainable Innovation and Circular Economies in Health
Dimitrios Kalogeropoulos^{1,2,3,*} ; Paul Barach^{4,5}

This is an article - reproduced in its entirety and saved as a PDF. Below is the front matter info.
NARRATIVE/SYSTEMATIC REVIEWS/META-ANALYSIS

1 UCL Global Business School for Health, London, UK; 2 EdisonTM Accelerator, London, UK; 3 IEEE Standards Association, Healthcare and Life Sciences Practice, New York City, New York, USA; 4 Thomas Jefferson College of Population Health, Philadelphia, Pennsylvania, USA; 5 Sigmund Freud University, Vienna, Austria

Keywords: artificial intelligence (AI), circular economy, data asymmetry, digital health, health innovation ecosystems telehealth, evaluation, value-based care

Abstract

Digital health interventions, including the use of telehealth augmented by artificial intelligence (AI), support an increasingly broad range of improvement goals for prevention and treatment. Limitations obstructing the many digital benefits of the targeted healthcare innovations from reaching their full potential include the lack of robust usability and user-centered design, nimble regulatory policy, and lack of adequate high-quality evidence and methodologies to evaluate the performance generalization and clinical robustness. We explore health innovation using different value systems and solutions proposed to overcome the fundamental limitations arising in the data value system. We propose a new telehealth paradigm and incorporate intervention designs, which combine clinical innovation with innovation in data resource development. Machine learning and AI have the potential to enable circular economies for digital and health innovation, in which sustainable solutions can be offered within a data-enabled collaborative and shared digital ecosystem. Alignment of industry standards, adjustments to regulatory policies, and the embrace of new governance models for telehealth-based innovation are essential for this new approach for health innovation scaling, clinical adoption, and social innovation.

Received: January 11, 2023; Accepted: February 14, 2023; Published: February 28, 2023

Planet Positive 2030 Comments - Wade Ingram, Eric Gallo, Andrea Danielescu

Wade Ingram, Principal Scientist; Eric Gallo, Senior Principal Scientist; Andreea Danielescu, Director
Future Technologies R&D, Accenture LLP

August 24, 2023

Dear Co-Chairs Luís C. Lamb and Joel Myers,

Accenture is pleased to provide input on chapter 7 – Towns and Cities, of the IEEE Strong Sustainability by Design document for the Planet Positive 2030 initiative.

Accenture is a global consulting, digital, technology and operations provider serving clients in more than 120 countries. As a company, we deliver tangible outcomes for our clients leveraging our functional expertise across many different fields. We are one of the world's leaders in helping drive meaningful change in industry and beyond.

Accenture Labs is the R&D arm of Accenture, incubating new concepts and applying the latest technologies to deliver breakthrough solutions for business and society, today. Our team, Future Technologies, explores the intersection of computing and other rapidly advancing disciplines to enable a new generation of smart products and services. We work closely with both industrial and academic researchers to explore novel technologies that we believe play an important role in creating a more sustainable planet.

We commend IEEE and all those responsible for contributing to this document and their visions for a more sustainable, inclusive, and equitable world. The declarations here are important and ambitious and show the commitment and focus of scientists around the world.

Sincerely,

Wade Ingram, Principal Scientist
Eric Gallo, Senior Principal Scientist
Andreea Danielescu, Director
Future Technologies R&D
Accenture LLP

Feedback on IEEE Strong Sustainability by Design Ch. 7 - Towns and Cities

General feedback: For recommendations throughout the chapter, replace words like “must” and “need” in recommendation to “should” because these are recommendations.

Page 250 – 1st paragraph: We suggest changing “Cities have been transformed into positive innovation ecosystems” to “Cities have been transformed into climate-positive innovation ecosystems”. 4th paragraph: Can the authors explain more about the value of “renovation” in context to well-being?

Page 251 – 1st paragraph: “Rebuild the legacy fossil fuel urban infrastructure” sounds like it’s calling for a return to fossil fuel infrastructure? Perhaps use “reimagine.”

Page 252 – Why are quotations used around “positive” in the first use, but not again?

- The last sentence that starts with “Positive innovation ecosystems...” is difficult to understand and should be rewritten more coherently.

Page 253 – This section should address the structural changes needed to implement innovations, such as economic obstacles and regulatory obstacles. For instance, sustainable technology often has high up-front costs that excludes individuals in lower income brackets from adoption, like with incentives for EVs in the US that only are available if you have the income to afford a new car in the first place. This section should more directly address the need to address the surrounding economics and infrastructure to enable innovative ecosystems and create less resistant adoption pathways for these technologies.

Page 254 – In discussing sustainable smart monitoring systems, authors should mention extending energy sources to include harvesting of waste energy to create more circular systems, as well as pushing for efforts to further reduce the cost and complexity of waste energy capture. Discussions should mention decentralization of the energy grid to prevent energy being wasted during long-distance transport over power lines.

Page 255 – Recommendations #2-3 – Energy policies improving energy efficiency and green energy should be implemented in developing countries, but authors should acknowledge the importance of decarbonization and implementing policies like this in the Global North, where 23 countries are responsible for half of all historical CO₂ emissions.

- Recommendation #5 & 6 – focus solely on “energy for efficient buildings” should be expanded to include sustainable designs and retrofits to move towards passive environmental control. Many homes can reduce energy consumption and environmental impact with efficiency audits that improve sealing and insulation within a building.

Page 256 – Economic incentive structures are mentioned broadly (Recommendations #2,4,5,7) without mention of how those incentives will be implemented. There should also be mention of removing existing economic barriers.

Page 257 – Paragraph 3, the sentence that begins with “The megacities should be redesigned from the ground up...” How do you the authors propose funding and incentivizing rebuilding of major metropolitan areas?

Page 258 – Add electric to “Automated electric vehicles” in paragraph 2

- Implying that activism from citizen groups is a viable path forward and that these groups work with manufacturers seems historically short sighted. This is already happening and it is not having the desired impact at the desired pace – globally CO₂ emissions are at an all-time high over the last decade.

Page 261 – Change “Watersheds should be rebuilt...” to “Watersheds should be redesigned and rebuilt to help with water recapture for local aquifers and availability, maybe even by restoring natural systems like those created by beaver colonies”.

- This section should more directly address unique sources of air pollution that aren’t related to the previously discussed fossil fuels. There is also no discussion on how air quality is not always a local issue (e.g., forest fires in faraway places), while water issues are discussed as requiring cooperation between urban and rural areas.

Page 267 – It can be argued that anxiety and social isolation has increased in the 21st century for a number of reasons (social media, greater imbalance between work and life, etc.). In addition, anxiety can often be a medical condition and have nothing to do with situation or circumstance.

- In recommendation #4, the phrase ‘homogeneous society’ has a negative connotation to many subsets of the population and should not be used.

Page 271 – The recommendations imply that ‘data centers’ being improved are the only and best solution. These recommendations, just as was done with the discussion on energy, should look at alternative or modified architectures that better suit user needs and improve energy efficiency. Decentralizing computation to the edge can decrease energy use and be powered by waste energy streams.

Page 273 – Recommendation #1 – Knowledge is widely accessible to those with internet access, but there are many who cannot afford it and there are some without any access, regardless of money.

- Recommendation #2 – The National Institute of Standards and Technology has released an AI Risk Management Framework that is relevant to this recommendation about ethical use of AI and risk measurement, tolerance, and prioritization and could be used as inspiration for concrete recommendations.

Planet Positive 2030 Comments - Cindy Cooper, Michael Milligan, Cynthia Anderson

Cindy Cooper, The Lemelson Foundation; Michael Milligan, ABET; Cynthia Anderson, Alula Consulting

Dear Strong Sustainability by Design Report Review Committee,

Congratulations on producing the Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions (SSbD) draft report. It is clear that this report involved an immense amount of effort and is a product of collaboration by a large group of dedicated experts. We deeply appreciate the opportunity to provide feedback on the report during the open commenting period and hope that you will find our comments insightful and helpful to improve the report and expand the report's utility within and beyond IEEE audiences.

We are commenting on behalf of The Lemelson Foundation, a family foundation based in Portland, Oregon, that has been dedicated to supporting “the people and systems needed to advance impact invention through the creation of products that have positive social impact, reflect environmental responsibility and support financially self-sustaining businesses,” for over 25 years. As well as on behalf of ABET, quality assurance of engineering/STEM colleges and programs (IEEE is founding member), and Alula Consulting, a sustainability consultancy that has been working with The Lemelson Foundation for several years. The SSbD report is of particular interest to us as it is aligned with the Engineering for One Planet (EOP) initiative, supported by The Lemelson Foundation since 2017, that seeks to transform engineering education so that environmental and social sustainability become core tenets of the engineering profession. We greatly appreciate that the EOP website was cited in the SSbD report under Further Resources several times in the report.

In collaboration with hundreds of stakeholders from across sectors—academia (students, faculty, administrator), government, nonprofits, funders, and industry—the EOP initiative has co-created and launched four freely available, online resources to support engineering faculty and administrators efforts to integrate sustainability into their courses, programs, departments and institutions. Each of the resources underwent a public commenting period, just as you are doing with the SSbD report.

EOP teaching resources, which are mapped to ABET Student Outcomes outlined in Criterion 3, are as follows:

- [The Engineering for One Planet Framework: Essential Sustainability-focused Learning Outcomes for Engineering Education \(2022\)](#)
- [Engineering for One Planet Framework: Quickstart Activity Guide](#)
- [Engineering for One Planet Framework: Comprehensive Guide to Teaching Core learning Outcomes](#)
- Engineering for One Planet Framework: [13 Step-by-Step Ideas for Integrating Sustainability into Core Engineering Courses](#)

We want to bring these resources to your attention and for possible inclusion in the SSbD report as free, expert- and faculty-vetted, engineering-focused teaching resources to aid the integration of sustainability into engineering education. We would be delighted to discuss our comments with the review committee, if that would be in service to the revision of the draft SSbD report.

In reviewing the SSbD draft report, we carefully noted the purpose, the Ten Guiding Principles, and the Identified Issues listed. In all cases we found the opportunity to emphasize the current and future roles that engineers play and, specifically, the need to integrate sustainability into engineering education more deeply and broadly in order to help future engineers play a significant role in overcoming the issues identified in the report. We appreciate that education (generally) is referenced throughout the report, however, we recommend identifying engineering education (specifically) and lifting up the topic of sustainability-focused engineering education, especially in the principles and identified issues sections. Every guiding principle would be influenced by educating and training engineering students differently so that each engineering student would graduate being exposed to and having acquired the skills, knowledge, understanding, behaviors and mindsets to approach climate change challenges with

confidence and be able to develop sustainable solutions that are culturally-sensitive and context-appropriate.

Feedback and Recommended Changes

- On page 14, under the first of the Ten Guiding Principles, we recommend adding “academic institutions” to the list of stakeholders, as follows: “Responsible and ethical leadership from individuals, organizations, academic institutions, and communities. The responsibilities of individuals, of organizations, of academic institutions and of communities should be broadened...”

In review of the “identified issues from the various chapters of the compendium”, starting on page 16 and ending on page 26, we believe that there is a lack of attention on the state of current engineering education and the training of professional engineers as a key issue to help address the climate change crisis. We recommend the following changes to the identified issues lists:

- On page 16, under Metrics/Indicators, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about, understand and employ sustainability-oriented metrics and indicators”
- On page 17, under Economics and Regulation, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand key economic and regulatory issues that will influence their ability to create sustainable solutions”
- On page 18, under Global Methodologies, we recommend the inclusion of: “Issue: Educational barriers to achieving regenerative sustainability by 2030”
- On page 19, under Forests and Trees, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand that deforestation and forest degradation are key drivers of the climate crisis”
- On page 19, recommend changing the header from “Forests and Trees” to “Forest Ecosystems,” which is more encompassing than forest and trees to include critical forest habitats such as different types of biomes, ecosystems services, and is inclusive of the soil, animals, plants, etc., that are part of forest ecosystems. This nomenclature would need to be carried forward throughout the document.
- On page 20, under Rivers and Lakes, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand the critical issues that face freshwater ecosystems that are key drivers of the climate crisis”
- On page 20, recommend changing the header from “Rivers and Lakes” to “Freshwater Ecosystems,” which is more encompassing than rivers and lakes to include critical freshwater habitats such as streams, creeks, wetlands, etc. This nomenclature would need to be carried forward throughout the document.
- On page 21, under Towns and Cities, we recommend the inclusion of: “Issue: Educational barriers to achieving regenerative sustainability by 2030”
- On page 22, under Oceans and Coasts, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand the critical issues that face saltwater ecosystems that are key drivers of the climate crisis”
- On page 22, recommend changing the header from “Oceans and Coasts” to “Saltwater Ecosystems,” which is more encompassing than oceans and coasts to include critical saltwater habitats such as estuaries, salt marshes, marine sanctuaries, mangroves, etc. This nomenclature would need to be carried forward throughout the document.
- On page 23, under Farmlands and Grasslands, Mountains and Peatlands, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand the critical issues that face land-based ecosystems that are key drivers of the climate crisis”
- On page 24, under Human Wisdom and Culture, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand their role in perpetuating social and environmental issues that relate to human wisdom and culture”
- On page 25, under Sustainability Commons, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be knowledgeable about and understand that sustainability commons are a public good that needs to be conserved and regenerated”

- On page 26, under The Arts, we recommend the inclusion of: “Issue: The need for graduating and professional engineers to be practiced in design of sustainable solutions and have the ability to collaborate across disciplines and sectors”

Finally, an additional recommendation to help with broader engagement is to create a synthesis document (e.g., less than 10 pages).

We are grateful for the massive efforts of the organizers and committees to develop this comprehensive report. Cynthia (Cindy) Anderson would welcome the opportunity to join a committee call or join a committee, if that would be of service to this effort.

Planet Positive 2030 Comments - Francesco Maiorana

Francesco Maiorana, University of Catania Italy, University of Messina, Italy, University of Urbino, Italy

Comments regarding Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions:

1. Introduction. Page 10. Minor point: footnote 17 Planet Positive 2020 means reducing – a space is missing. A space is missing as noted in the UN Convention too.

Page 16-26. This is a general opinion: turn the tone from negative to positive, i.e., from “Lack of socioeconomic transformation toward sustainability” into “Need of socioeconomic transformation toward sustainability”. Add some potential remedy to each issue. When appropriate complete each sentence with some examples.

Page 16. Should people deserve a chapter in the compendium?

Page 16. Could education have a role in reaching the Planet Positive goals? If yes, as it seems from chapter 4 on global methodologies, highlight it in the introduction.

Page 22. Minor point: “Ubiquitous presence of micro- and macro- plastic in the ocean is repeated.

Page 23. Minor point: “Need for integration to Use ancestral wisdom”, U in Use should be lowercase.

Page 24. Should “Need to educate all learners and all citizens to the culture of sustainability” be added? The link to <https://www.oecd.org/education/2030/learning-framework-2030.htm/> could be added as a footnote.

Page 25. Caretakers of the planet. Could it be useful to list some of them or provide a link collecting all. In general, this type of lists could be crowdsourced and collectively created through a shared document.

Page 25. Currently, various sustainability models ... Provide key examples of sustainability models. In many pages you have space to add notes and references

Page 26. Should “Need to add creativity in the educational process to sustainability” be added? The link to <https://www.oecd.org/pisa/publications/PISA-2021-creative-thinking-framework.pdf> could be added as a footnote.

Page 26. Is “Waste and waste management as a space for innovation” out of scope?

Planet Positive 2030 Comments - Jim Salsman

Jim Salsman, Speak Clearly LLC

In accordance with the suggestion on page 122 of Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions (IEEE_1FILE_SSBD_v1_6.12.23-final.pdf in the Economics and Regulations chapter under "Technological Insights and Recommendations;" specifically, that "Technically oriented feedback is greatly encouraged") I am asking that the following eight specific, concrete technical recommendations be included as recommended practices:

1. Scope 3 emissions accounting is essential for fully assessing an organization's climate impacts. Requiring Scope 3 emissions like employee commuting to be included in greenhouse gas inventories should be a recommended practice. Broadening emissions accounting provides more data to inform decarbonization efforts across the value chain. Large corporations have been seeing proven steep profit and productivity increases from work-from-home, yet still more interested in preserving the short-term and counterproductive value of their low-lying coastal commercial office holdings and leases by resisting Scope 3 emissions accounting. For further detail on this topic, please see:

<https://www.epa.gov/climateleadership/scope-3-inventory-guidance> and
<https://blog.google/products/search/new-ways-to-make-more-sustainable-choices>

2. As renewable energy expands, sufficient grid storage will be critical. Given hydrogen's proven use for renewable power storage and zero carbon use when produced via electrolysis, requiring consideration of green hydrogen alternatives in grid storage projects should be a recommended practice. For more information, please see:

<https://www.controlglobal.com/articles/2022/hydrogen-is-key-to-sustainable-green-energy> and
https://ww2.arb.ca.gov/sites/default/files/2020-07/ghc_cn_fuels_infra_july2020.pdf

3. Dual-use desalination for freshwater and ocean capture of CO₂ from seawater has synergistic sustainability and economic benefits. Advocating this carbon removal approach should be a recommended practice. For more information on this topic, please see:

A Conversation with Obi Felten, founder and CEO of Flourish Labs (at 33m20s) and Secretary Condi Rice on Google Project Foghorn: <https://x.company/projects/foghorn> (it was discontinued when oil was below \$50 per barrel, but has not been reinstated yet) which refers to the technology described in <https://www.sciencedirect.com/science/article/abs/pii/S1750583617304322> and the review and analysis linked at the beginning of this paragraph.

4. As per, for example, Stanford Civil Engineering Professor Mark Jacobson in Stanford Webinar: Achieving a Sustainable Future with Clean, Renewable Energy and Sto...at 29m30-50s, achieving 100% renewable energy globally by 2035 is feasible. Advocating for this rapid transition should be a recommended practice to limit warming in line with climate science. Dr. Jacobson provides plans for 145 countries to do so at

<https://web.stanford.edu/group/efmh/jacobson/Articles/I/145Country/22-145Countries.pdf>, and there is a popular exposition pertaining to the economics of such transitions at
<https://www.linkedin.com/news/story/is-clean-energy-switch-worth-it-5951898>

5. With advantages for storage density and transport, using ammonia for renewable power storage and as an energy carrier where appropriate should be a recommended practice. Dual-use ammonia for fertilizer and power storage improves fungibility and thus can potentially lower prices throughout the food production supply chain; this application has gained recent commercial interest. For details please see:

<http://www.leightyfoundation.org/wp-content/uploads/lces-2012-guangzhou-21oct.pdf>

6. Carbon capture will play a crucial role in climate mitigation. Advocating support for R&D and competitions to advance these technologies should be a recommended practice. A leading example is the Carbon Removal X Prize competition.

7. Corporate vehicle fleet electrification can achieve synergy with commercial parking lot EV charger availability expansion, and thus should also be a recommended practice. An example of a prominent such project is Walmart's Project Gigaton.

8. Displacing timber with plastic lumber (i.e., composite materials such as fiberglass reinforced plastic) can simultaneously sequester carbon in construction materials and promote reforestation. Thus the use of such materials should be a recommended practice for carbon sequestration. Examples of companies promoting such practices can be found at <https://www.blueplanetsystems.com> and <https://www.carbixcorp.com>

NOTE: These recommendations were selected with the goal of accelerating near-term progress in carbon reduction. Unlike renewable power in general and electric vehicles, for example, which now enjoy growing market support, these recommendations need advocacy now to reach viability and maximize decarbonization because they lack the commercial backing despite their great potential. The recommendations aim to promote proven but under-supported technologies crucial for expediting the transition to net carbon negative economies. They represent technologies with high impact potential now, at this point in time, but should evolve as adoption advances and new innovations come to need such backing. In the coming years, the focus of recommendations should shift from these suggestions to the next wave of solutions requiring support to achieve rapid decarbonization.

Planet Positive 2030 Comments - Dr. Gudkov Aleksei

Dr. Gudkov Aleksei, Israel

This paper is a great example of very detailed thoughts and suggestions on the topic. I enjoyed reading it. The work is very detailed. It consists of a huge amount of information. Some statements are duplicated in different parts of the paper.

More specifically I would like to provide the following comments. Some of them are already reflected in other parts of the paper. Meanwhile I believe that some of them could be helpful.

Page 2. "Significantly increase" and "Be well" are not quantitative indicators. The result has to be certain and calculable so it will be possible to estimate the feasibility of the result.

Page 3. The document could be a base for development educational materials.

Page 9. Eudamonia is a very global goal. The health of the earth's ecosystems is a more suitable goal as it specifically fits the paper. Especially on page 31 the goal is determined as a long-term, flourishing planet Earth.

Page 14. As the communities have only one player it is reasonable to include the authority (government) as a responsible participant of the process.

Page 16. It is necessary to measure scientific development. The science and research that provide ecological economic growth are very important indicators of the health of the ecosystem.

Page 17. It is necessary to measure a negative impact of the regulation as an intentional harm validated by authorities.

Page 18. It should be helpful to measure the impact of various cultures and traditions on ecology.

Page 37. The most important consequence of climate change is natural non-proportional distribution of power among all nations. The regulation shall focus on the mitigation of natural inequalities in society and between nations.

Page 39. To prevent the inevitable conflict and wars for natural resources the international rules on the minimal level of resource sharing should be developed. A new richer and broader credit regime (like carbon regime) and new international custom tax redemptive regime should be developed to compensate for inequalities among nations and encourage fair distribution of natural resources and increase local technological compensation and negative consequences of climate change.

Page 51. Transparency and awareness of problems are the most important part and the first step to prevention of negative consequences of climate change.

It is necessary to develop an information system that links climate changes, countries' responsibility and compensatory mechanisms.

Page 63. The balance should be based on appropriate planning and prognosis. The prognosis and predictive information system should be the core element of balanced sustainability.

Page 67. Cultural sustainability cannot be a single one but rather a bundle of approaches different for nations taking into account traditions, religions and cultures.

Page 75. Technology gaps paragraph should be improved, explained and edited. It could be helpful to add prediction and prognosis.

Page 81. Measuring living systems is necessary to take into account that predictive AI systems shall not estimate humans' capabilities and influence personal human development.

Page 95. First of all, the technology could help to develop a noosphere. The Noosphere is the artificial environment in contrast to the geosphere (inanimate nature) and the biosphere (living nature) created by humans to sustain humans' development.

Page 106. Verification of information requires not only assurance but also an independent audit of the data delivered by participants of the process and governments.

Page 142. The value of care shall be transformed to the duty of government care about the biosphere on a global level.

Planet Positive 2030 Comments - Keshav Prasad Kuruva

Keshav Prasad Kuruva, Oakland-EastBaySection

1. SSBD. Page 264

- a. On Page 264 , under **Recommendations** , I recommend adding 2 more recommendations like below
- i. "Efficient food expiration detection systems should be incorporated across major retail and consumer(s) locations to avoid early disposal of consumable food."
 - ii. "Food sustainability centres should provide core knowledge on advanced food recycling and waste reduction methods constantly to food production and manufacturing organizations to enhance food production life cycle(s)."

2. SSBD. Page 265

- a. On Page 265, under **Technological Insights and Recommendations**, I recommend adding these insights/recommendations.

- i. Using Artificial intelligence, retail and grocery systems can improve the lifespan of packaged food by training data models that generate approximate expiration dates for shelf-stable and perishable foods.
- ii. With the latest advancements in Biodegradable sensor mechanisms, food packaging equipment can enable food scanning and detection to assess the lifespan of food for consumption which eliminates the need to rely on expiration dates.

iii. Artificial Intelligence Imagery Scanning enables scanning of all types of packaged food and builds training datasets created out of the biodegradable sensors, the food sustainability engine will generate results and status of the packaged food (rotten or good to consume) to assist in enhancing the food life cycle.

- iv. Sustainability organisations should use technology to create sustainability software to emulate environments(temperature, precipitation, moisture (pH levels)) to minimise food degradation between transportation and consumption.

References:

<https://www.materialstoday.com/carbon/news/biodegradable-paper-sensor-detects-spoiled-food/>
<https://phys.org/news/2017-09-biodegradable-microsensors-food.html>

Planet Positive 2030 Comments - Trey Lakatos

Trey Lakatos, Signify Lighting, United States

Page 257 has inconsistent subscripting specifically with the compound CO₂ where CO2 is used in the quotes while CO₂ is used elsewhere.

In addition to the reasons listed beginning on page 258 for urban optimization, I would include either a recommendation or addition to point 3 (P. 259) about increasing the walkability of urban cities. Specifically relating back to the concept of the “15 Minute City” where infrastructure is designed around a nominal time of 15 minutes to reach any destination regardless of mode of transit.

Reference Link: <https://www.15minutecity.com/>

Planet Positive 2030 Comments - Ashok Deobhakta

Ashok Deobhakta

1. The document has been wonderfully planned and structured.
2. The introductory material has rightly highlighted the issues of concern.
3. The document is quite exhaustive and requires considerable time to understand the present scenario.
4. It will be convenient for all types of readers, to identify key terms, including declarations, commitments, and their definitions, in a separate annexure or appendix-in addition to the present arrangement.
5. Can we give further updates progressively?

Planet Positive 2030 Comments - Vicente Alonso Navarro Valencia

Vicente Alonso Navarro Valencia: Technological University of Panama

Comments

Category	Page	Subclause	Line #	Comment	Proposed Change	Link
Technical	53	6c		Enhance the electricity grid infrastructure. Integrate distributed energy sources such as solar panels as well as storage systems to buffer the loads and provide more resilience.	Enhance the electricity grid infrastructure. Integrate distributed energy sources such as wind power, solar panels, and other renewable resources as well as storage systems to buffer the loads and provide more resilience.	
Technical	53	7a		Develop health information systems. Implement integrated risk management, early warning systems, disease tracking and management (e.g., Lyme disease, malaria, new virus strains).	Develop health information systems. Assess vulnerable zones to currently know and new disease threats as temperature and humidity shift. Implement integrated risk management, early warning systems, disease tracking and management (e.g., Lyme disease, malaria, new virus strains).	
General	185	case 5			Case Study 5: Panama Trust for Water, Protected Areas, and Wildlife. The Trust aims to be a permanent source of financing and support for environmental initiatives of both public and local private investment, with the goal of closing the existing financial gap in environmental management and, at the same time, creating opportunities for green economic growth that strengthen socio-ecosystem capacities in communities. The Trust in Panama represents the response to the current environmental challenges, creating an inexhaustible fund for nature conservation. It encourages the participation of both public and private stakeholders in protecting and caring for our common home, planet Earth.	https://www.fondov Erde.gob.pa/ficha-technical/
Style	368			The table of content is not in the format of the others table of content. The issues list is numeric not alphabetical.	Change the issue list from alphabetical to numeric.	

Planet Positive 2030 Comments - Dennis Miller

Dennis Miller

I think more is needed to backup climate change is real with facts and figures since climate records originated. The most common criticism from right wing climate change doubters is that climate changes are cyclical and that we will not always see the extreme changes we are seeing today. They claim that there is no hard scientific evidence to prove climate change is real.

We need more on the effects of farmers using the Paraquat herbicide on their fields over the years and it's linkage to Parkinson's disease

Planet Positive Comments - Transit - Tyler Folsom

Tyler Folsom

Page 259, point 3 in Need to transform legacy fossil-fuel urban transportation and infrastructure

Existing wording

The use of public transport, powered by renewable fuel, should be incentivized, making it readily available in cities and towns, mostly free, and connecting hubs of urban activities (e.g., offices, schools, and government services). In addition, added greenery to public transit stations would mitigate climate change heatwaves. 337 Furthermore, public transit should be run to reduce the need for a car, e.g. if you are able bodied. Ride/taxi services should be available for older persons, the disabled, and those with small children. Public transit should also be made more affordable to increase its use.

Comments

It is not clear that public transportation as we know it (based on buses and trains) is the solution. If automated vehicles can fulfill their promise to provide safe and reliable transportation, robot taxis may become less expensive than large vehicles. The transit hub model may be obsolete with mobility as a service available to anyone 24/7. Wilson, NC is operating a driver based micro-transit system at \$2.50 a ride.

<https://abcnews.go.com/US/wireStory/public-transit-uber-small-city-ended-bus-service-103244215>

With automation, a vehicle weighing less than the riders could offer the same level of service as a 4000-pound car carrying a 200-pound person or a 38,000-pound bus carrying 10 people. With the elimination of the largest transit operating expenses of driver salary and fuel, subsidies may not be necessary. There may be no difference between private and public transportation. If most urban transportation is based on enclosed electric bicycle class vehicles, no new charging infrastructure is needed.

See

https://www.researchgate.net/publication/356194082_Improved_Bus_Service_on_Ten_Times_Less_Energy

Suggested wording

Mobility as a Service (MaaS), powered by renewable fuel, should be the default transportation mode in cities and towns. MaaS should be free or low-cost and available to everyone. It will connect urban activities such as offices, factories, schools, shops and government services with high availability 24/7. Vehicles should offer a high ratio of passenger weight to empty vehicle weight, reducing energy requirements. A high degree of traffic automation reduces congestion. Microvehicles will require less paved area which shall be converted to greenery that will mitigate climate change heatwaves.

Planet Positive 2030 Comments - David Akobia

David Akobia, Noble Profit

Strong Sustainability by Design includes very important topics to address the urgent challenges of our time. While it provides an extensive overview of multiple sectors and fields, with the following comment I'd like to direct attention to an area which has the potential to significantly influence our journey towards a more sustainable future: the telecommunication industry's shift and its relation Sustainability .

Energy Impact of Mobile Networks and the Promise of 5G and 6G Networks

Beside the energy transition and the use of AI solutions for optimization, an important contributor to a more sustainable and energy-efficient future is the telecommunication industry. Over the last 4 years, annual global energy consumption has ranged from approximately 23,000 to 25,000 TWh[1].

The telecommunication industry currently uses 2-3% of global energy, Mobile cell phone transmitters account for around two-thirds of the total energy consumption of telecommunications networks, or around 160-240 TWh per year, which is equal to 0.7-1% of global electricity use.[1][3]

Future generations of telecommunications such as 5G and 6G networks can be up to 90% energy efficient in terms of Data Transmitted/Energy Consumed.[2][4]. Which potentially can save up to 0.63-0.9% of global energy consumption, relative to the amount data transmitted/energy consumed.[4][5]

[1] International Energy Agency: <https://www.iea.org/>

[2] <https://www.nokia.com/networks/bss-oss/ava/energy-efficiency/>

[3] "The Environmental Impact of the Mobile Industry" by the GSMA

[4] "The Future of Energy Efficiency in Mobile Networks" by Ericsson

[5] <https://www.gsma.com/>

[6] World Economic Forum: <https://www.weforum.org/>

Planet Positive 2030 Comments - Principles - Juliana Guerra, Shawna Finnegan

Juliana Guerra, Independent, Latin America; Shawna Finnegan, APC, North America

Submission to IEEE Planet Positive 2030 Request for Input (RFI) on Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions.

Guiding Principles

We welcome the invitation to input to the work Planet Positive 2030, and the initiative for Strong Sustainability by Design (SsbD). This input focuses on the Guiding Principles outlined in the report, with recommendations to include further cases and resources, particularly from the global South.

Responsible and ethical leadership

Guiding Principle 1 refers to “Responsible and ethical leadership from individuals and organizations” (p. 35), however we note that the full description of this principle focuses on responsibility without sufficient consideration of ethics, which we believe is critical to the approach of all processes relating to technology and knowledge production.

Guiding Principle 9 references the IEEE Code of Ethics in relation to “Responsible use of technology and technology labeling” and responses to “irresponsible or unethical uses of technology” (p. 71), and we recommend to further reference resources on ethics in technology.¹

Impacts and responsibility on climate change and sustainable futures

Guiding Principle 2, which focuses on “[j]ustice, diversity, equity, and inclusion” (p. 39) and emphasizes the impacts of climate disasters on communities across the world, including in countries in the global North that are seen as “developed”. We recommend to refer also to the outsized impacts of wealthy countries and the reliance on extractive and exploitative practices of resource mining and production that impacts communities in the global South.²

Regarding the impacts of extractivism and exploitation, we appreciate that the report includes a focus on extraction and makes the statement that “[a]n economically overdeveloped society has created unnecessary needs driving overconsumption. Gross domestic product (GDP) measures economic growth, which does not capture the complexity of the extractive model our societies have been based on” (p. 317).

Circular economy of tech devices

We propose to include cases from APC’s guide to a circular economy of digital devices among the case studies represented under Guiding Principle 5,

1 Such as IEEE Ethically Aligned Design

https://standards.ieee.org/wp-content/uploads/import/documents/other/ead_v2.pdf

2 For example, please see Peña, P. (2020). Bigger, more, better, faster: The ecological paradox of digital economies. In Global Information Society Watch 2020 – Technology, the environment and a sustainable world (<https://giswatch.org/node/6245>) focuses on “[t]he regenerative imperative and a circular economy” (p. 59).³ We welcome references to the right to repair that should be inherent in every product (p. 58) and wish to emphasize the importance to protect and uphold this right. APC’s guide to a circular economy of digital devices offers relevant resources and case studies that respond to the right to repair, including experiences from social enterprises that collect, repair and sell these devices provide employment opportunities for individuals.⁴

Community Networks as an existing alternative

We recommend including the work of community networks in case studies of the Guiding Principle 7 “Alignment of global goals with local goals and actions”(p. 66). Community networks offer important alternatives for connectivity based on local, low-cost and environmentally aware solutions.⁵ These cases also respond to Guiding Principle 2, “Justice, diversity, equity, and inclusion”.⁶

Avoiding misleading commitments

Guiding Principle 8 “Culture of sustainability” mentions that “[b]usinesses should aim to qualify to become ethically certified, for example, B-Corp, Fair Trade International, Climate Neutral, and People for the Ethical Treatment of Animals (PETA)” (p. 68), while Guiding Principle 9 “Responsible use of technology and technology labeling” (p.71) mentions various cases of labeling in history, and how to label responsible technologies. We recommend further clarification on how this community can ensure that labels are not being used to evade responsibility for harms.

In order to guarantee that labeling and certification does not allow the industry to evade their responsibility but motivates them to improve their practices and thus strengthen their commitments, it is important to consider potential and lived harms experienced by people, communities and society. We recommend to include references on impact assessments like “Assembling Accountability” by the US based organization Data & Society, among others.⁷

³ APC Guide to a Circular Economy of Digital Devices <https://circulartech.apc.org/>

⁴ See for example: <https://circulartech.apc.org/books/a-guide-to-the-circular-economy-of-digital-devices/page/module-8-extending-the-useful-life-of-a-device>

⁵ <https://www.apc.org/en/blog/capacity-building-sustainability-strategy-community-networks> ⁶ <https://www.apc.org/en/tags/community-networks>

⁷ <https://datasociety.net/wp-content/uploads/2021/06/Assembling-Accountability.pdf>

Planet Positive 2030 Comments - Care - Guerra, Finnegan

Juliana Guerra, Independent, Latin America; Shawna Finnegan, APC, North America

Submission to IEEE Planet Positive 2030 Request for Input (RFI) on Strong Sustainability by Design: Prioritizing ecosystem and human flourishing with technology-based solutions.

Issue: Lack of care

This brief input focuses on the issue “Lack of care” (p. 137-146), with recommendations to include further resources, mainly from the global South.

Embedding collective care

We welcome the awareness of the “lack of care” within the global methodologies to achieve a 2023 Planet Positive, and we consider that there are currently many experiences aimed at placing care at the center of learning, production and development processes.

As part of the recommendation **Increasing our valuation of care**, (p. 142) it is worth to mention the care approach for providing digital support to civil society aimed to the CiviCERT consortium.¹ In addition, in the context of the COVID 19 there are many resources on collective responses to basic needs such as food in cities,² or the role of community networks to cope with the Pandemic,³ expanding their focus beyond connectivity to act as networks of care.⁴

In **Prioritizing care over profit** (p. 142) it is mentioned the need to be cautious about introducing AI systems for providing synthetic care and delegating caregiving responsibilities in third party systems. As a complement, it would be important to mention the precarious working conditions underpinning data labeling systems⁵ which are at the heart of recent AI developments.

In **Minimal market input** (p. 142) carbon credits are mentioned as an alternative to currency for exchanges and interactions. In this context, it is important to be aware of the risks these forms of environmental compensation represent for the communities living in the territories where carbon credits can be implemented.⁶

¹The guide Tech-Care was launched in 2022. <https://tech-care.cc/>

²Desmaison, B., Jaime, K., Córdova, P., Alarcón, L., & Gallardo, L. (2022). Collective Infrastructures of Care: Ollas Comunes Defying Food Insecurity During the COVID-19 Pandemic. *Urbanisation*, 7(1), 46–65. <https://doi.org/10.1177/24557471221110951>

³Wungpatcharapon, S., & Pérez-Castro, B. (2022). How Social Infrastructures of Care and Solidarity Cope with the COVID-19 Pandemic: A Reflection from Community Networks of the Baan Mankong Programme in Thailand. *Urbanisation*, 7(1), 111–123. <https://doi.org/10.1177/24557471221107530>

⁴APC, Rhizomatica (2022). Beyond Connectivity: Networks of Care.

<https://www.medianama.com/2020/05/223-beyond-connectivity-networks-of-care/>

⁵Many journalists and researchers have recently addressed this issue, for instance <https://time.com/6247678/openai-chatgpt-kenya-workers/>

and <https://www.noemamag.com/the-exploited-labor-behind-artificial-intelligence/>

⁶Different cases on the conflicts over land that are generated by the management and allocation of carbon credits have been reported. We share just one case in Colombia (in Spanish) <https://www.lasillavacia.com/silla-nacional/territorio-de-los-jaguaires-de-yurupari-dividido-por-proyecto-de-bonos-de-carbono/>

In **Care as a universal value** (p. 142) we recommend to include references to ground that value. One example can be the experience of community environmental governance⁷ but there are many others. In **Care in context** (p. 143) there is a call to contextually define care practices and norms. Policies for inclusion in STEM communities are part of this purpose and there are plenty of initiatives, for instance the IEEE diversity, equity, and inclusion (DEI) resources website.⁸ In addition, we believe that it is crucial to include references of programs specifically focused on childcare assistance, for instance at **IETF**, **RIPE NCC** and many other organizations that are implementing this policy in their events and ordinary work.

Beyond that, there are also initiatives in technical communities to reflect on the presence of children during events.⁹

We welcome the statement that “[c]oncepts of care that are diverse, rooted in indigenous and local practices defined by the communities can help avoid furthering [[the]] established colonialist practices” (p. 143). With regard to the possibility of even engaging in peer-to-peer communication with indigenous and local communities, it is necessary to consider the possibilities of AI for accessing information in various languages, but it is necessary to consider the socio- environmental and economic costs of current language models, which are proving to be unsustainable.¹⁰

Finally, in **Education** (p. 143) we recommend to include resources from the feminist tech and community networks movements for teaching, learning and practicing care in technologies, using the Open Source approach: Design Justice principles and network,¹¹ the guide for community networks by brazilian organization Marialab,¹² the safety methodologies developed by brazilian Transfeminist Network of Digital Care,¹³ and specifically their activities on collective care and self-care,¹⁴ are some of the many resources available on the web.

⁷ Giambartolomei, G. & Franklin, A. & Fried, J., (2023) “Realigning practices of care and environmental governance: findings and reflections from a transdisciplinary research project in Wales (UK)”, Journal of Political Ecology 30(1). doi: <https://doi.org/10.2458/jpe.5075>

⁸ This is the website <https://www.ieee.org/about/diversity-index-old.html> and a post on how this initiative has evolved <https://spectrum.ieee.org/introducing-the-new-ieee-diversity-equity-and-inclusion-website>

⁹ Community networks stories <https://www.apc.org/en/blog/community-networks-stories-road-building-internet-access-all-why-not-take-our-children-us>

¹⁰ Lost in Translation: Large Language Models in Non-English Content Analysis <https://cdt.org/insights/lost-in-translation-large-language-models-in-non-english-content-analysis/>

¹¹ <https://designjustice.org/>

¹² Enredando territórios de cuidado, guia para aprendizado e construção de redes comunitárias. <https://www.marialab.org/wp-content/uploads/2021/03/Cartilha-de-redes-comunitarias-FINAL.pdf>

¹³ Digital care for feminist activists <https://www.apc.org/es/node/38112>

¹⁴ Included in the Feminist Tech Exchange platform <https://ftx.apc.org/books/en-gincana-monstra-opening-the-code/page/collective-care-and-self-care-activities-script>

Planet Positive 2030 Comments - JHColeman - Insurance

Jon Coleman, Hywel Consulting, Michigan USA

Pages referenced: 82, 97, 117, 147, 182, 219, 279, 329, 357, 372, 404

What Role Might Insurance Play in SSBD?

As sustainability efforts have evolved over the past 50 years, the insurance industry has played several ever-increasing roles: risk management, business continuity, and arbiter of project approval, among others. The SSBD draft document neglects to identify which role(s) should be promoted to engage insurance as both a forcing function and as a force multiplier. Wisely, the authors of the SSBD elected to call out specific issues generated by industry without attacking specific industry actors. Unfortunately, this avoidance resulted in the omission of any reference to the latent power of industries to affect meaningful change. In my experience, the insurance industry has pivotal roles in negotiating the behavior change required to enact many of the recommendations within SSBD, and these critical roles cannot be addressed by any other industry, government, NGO or academia, yet insurance actors can influence all stakeholders in myriad ways.

Issue: (Methodologies) Metrics development should honor nature: pp82 Issue: (Methodologies) Need for transdisciplinary collaboration: pp147

Issue: (Culture and Wisdom) Failure to promote a commons approach for a shared resources and asset-based approach: pp357

Risk Management

Sustainability and Risk Management are two sides of the same coin. Together these two perspectives allow us to pursue the upside while concurrently identifying downsides. And it is on this foundation that the insurance industry was built and continues to thrive. Furthermore, it generated the re-insurance industry which further extends risk management without impeding new development.

Issue: (Economics) Conundrum between economic growth and exacerbation of climate crisis: pp117

Issue: (Oceans and Coasts) Imminent threat of sea-level rise to coastal communities: pp279

Issue: (Arts) Waste and waste management as a space for innovation: pp404

References

First Street Foundation - The 9th National Risk Assessment: The Insurance Issue [Home - First Street Foundation](#) Axios - <https://www.axios.com/2023/09/27/insurance-rates-climate-change-extreme-weather>

FEMA - [NFIP's Pricing Approach](#) | FEMA.gov

NOAA - [2022 Sea Level Rise Technical Report](#) (noaa.gov)

Business Continuity

An extension of risk management has been the role of insurance companies to protect the flow of commerce when unpredictable events disproportionately affect geographic regions or economic sectors. (For clarity, "unpredictable" in this context means the inability to identify specific attributes of a loss such as where a wildfire starts or individual targets of cybercrime.) The need to maintain business activity during and following a catastrophe builds resilience into the underlying network of relationships at the critical junctures of response and recovery.

Issue: (Farmland and Grassland) Upstream over downstream mitigation: pp329 References

AP - [Wildfire-prone California to consider new rules for property insurance pricing](#) | AP News

HBR - [The Cyber Insurance Market Needs More Money](#) (hbr.org)

QBE - [Why Concerns Over Business Interruption Exposures Are Increasing](#) | Middle Market Growth

Project Approval

With increasing commonality, operations (public, private or NGO) require insurance oversight prior to any projects being initiated. If a project cannot secure the appropriate insurance, then the project is dead before it starts. This has been a double-edged sword affecting efforts to approach sustainable development goals. We need iterative engagement with the insurance industry to ensure that the metrics used to approve or deny projects are adapting swiftly enough to capture the urgency of the challenges we face. Many of the key tenets of SSBD defy easy measurement and that ambiguity does not lend itself to actuarial modeling. An iterative dialogue with insurance experts should enable an adaptive framework on which we can build many of the solutions recommended in the SSBD report.

Issue: (Metrics) Lack of socioeconomic transformation toward sustainability: pp97 Issue: (Forests) There is no assignment of value for the existence of nature: pp182

Issue: (Rivers and Lakes) Community overexpansion can overtax water resources Where the scaling effect, while seemingly efficient from a financial sense, may have the unexpected result of overtaxing available water resources: pp219

References

Reuters - [Serbian government blasts green groups for scuttling Rio's lithium project](#) | Reuters
Reed Smith - [Tomorrow's supply chain - First-party insurance coverage for supply chains](#) | Reed Smith - JDSupra

Final Thoughts

The roles of the insurance industry need to be embedded in the solutions we develop. The issues noted should encourage SSBD authors to reflect on and perhaps modify their contributions through this “insurance” lens. If we deign to build solutions and then consult insurance as a “bolt-on application”, we are destined to waste precious resources and be confounded by the results. My expertise is in behavior and finance, and I readily acknowledge my limited expertise in insurance. It is my sincere hope that those with insurance expertise weigh in on the solutions being developed to achieve Strong Sustainability By Design.

Issue: (Sustainability Commons) 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: pp372

References:

Embedded Sustainability – C Laszlo & Nadya Zhexembayeva
<https://www.perlego.com/book/1545337/embedded-sustainability-the-next-big-competitive-advantage-pdf>
Embedding Project - [Home](#) | [Embedding Project](#)

Planet Positive 2030 Comments - Davit Akobia NobleProfit Bflo

Davit Akobia, Technologist, Noble Profit, BFlo Technology, United States

Page Number	Comments And Suggestions
Pages 8-9	<p>Feedback for Strong Sustainability by Design (SSbD).</p> <p>Strong Sustainability by Design includes very important topics to address the urgent challenges of our time. While it provides an extensive overview of multiple sectors and fields, with the following comment I'd like to direct attention to an area which has the potential to significantly influence our journey towards a more sustainable future: the telecommunication industry's shift and its relation Sustainability.</p> <p>Beside the energy transition and the use of AI solutions for optimization, an important contributor to a more sustainable and energy-efficient future is the telecommunication industry. Please see suggestions for technical considerations.</p>
Page 43	<p>Recommendations: Guiding Principle 3—Energy systems transformation</p> <p>Energy Impact of Mobile Networks and the Promise of 5G and 6G Networks</p> <p>Beside the energy transition and the use of AI solutions for optimization, an important contributor to a more sustainable and energy-efficient future is the telecommunication industry. Over the last 4 years, annual global energy consumption has ranged from approximately 23,000 to 25,000 TWh[1].</p> <p>The telecommunication industry currently uses 2-3% of global energy, Mobile cell phone transmitters account for around two-thirds of the total energy consumption of telecommunications networks, or around 160-240 TWh per year, which is equal to 0.7-1% of global electricity use.[1][3]</p> <p>Future generations of telecommunications such as 5G and 6G networks can be up to 90% energy efficient in terms of Data Transmitted/Energy Consumed.[2][4]. Which potentially can save up to 0.63-0.9% of global energy consumption, relative to the amount data transmitted/energy consumed.[4][5]</p> <p>[1] International Energy Agency: https://www.iea.org/ [2] https://www.nokia.com/networks/bss-oss/ava/energy-efficiency/ [3] "The Environmental Impact of the Mobile Industry" by the GSMA [4] "The Future of Energy Efficiency in Mobile Networks" by Ericsson [5] https://www.gsma.com/ [6] World Economic Forum: https://www.weforum.org/</p>
374	<p>Re: Technological Insights and Candidate Recommendations Technically oriented feedback is greatly encouraged.</p> <p>Candidate Recommendation:</p> <p>BFlo technology, BFlo.io, as a decentralized data and resource system recommendation.</p> <p>BFlo technology, founded by Amy Seidman and stewarded by the Noble Profit team which I am a part of has built and piloted the technical infrastructure for the sustainability data commons around decentralized climate, SDG and ESG information.</p> <p>Leveraging BFlo technology, we can accelerate the adoption and use of such systems included in this paper, bypassing the multi-year process required to build, test, and deploy a solution.</p>

	<p>Through BFlo technology, we can</p> <ul style="list-style-type: none">- Identify greenwashing- Empower all stakeholders with a voice, and- Apply flexible systems for differing methodologies <p>https://BFlo.io https://NobleProfit.com</p> <p>recent link: https://seekingalpha.com/pr/19455937-noble-profit-sets-new-standard-for-climate-and-sustainability-first-united-nations-sdgi</p>
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Planet Positive 2030 Comments - Amy Seidman - NobleProfit Bflo

Amy Seidman, Founder, CEO, Noble Profit, BFlo Technology, United States

Page Number Comments And Suggestions

<p>Pages 8-9</p>	<p>Introduction: The work of Strong sustainability by design for planet positive 2030 is an incredible achievement by hundreds of people from diverse areas. To condense thinking through so many different avenues is a feat in itself. I am particularly impressed with the focus on interconnectivity with natural systems and recognizing access to all in order to create a fair standard for all. We often forget that we are nature and that the systems we rely on to exist are a subtly interconnected web of life where the checks and balances of natural systems, regardless of being remote, affect us all. At this pivotal point in time, it is essential for us to find consensus amid a din of information that tends to evolve in silos. By providing standards, we can begin to align our resources and our efforts to achieve greater goals than we can achieve alone. In a period where we are experiencing interconnected failures of old systems of resource extraction coupled with geopolitical tensions, it is an ambitious undertaking to create a future where we care for all. IEEE has taken this first step. I am deeply grateful for the contribution of so many incredible minds to create such a vision. Technology, when thoughtfully designed, has the capacity to rapidly scale solutions. With Artificial Intelligence developing at an unprecedented pace, these guidelines for us and for it are never more important than today for the wellness of all beings. Please see comments for Chapter 11 below for recommendations that affect multiple areas from access to technology, the need for safeguard systems for issues such as forced labor and displacement to malware and hackers.</p>
<p>Page 9</p>	<p>Typo: “to ensure” – Correction: “to ensure”</p>

<p>Page 371 (issues can also relate to the list on Page 25)</p>	<p>Chapter 11: Sustainability commons (e.g., Wikipedia, open-source communities, and distributed autonomous organization [DAO] models.) It is critical to recognize the pros and cons of DAO systems. If one member is malicious, all members could be affected. In the United States, DAO members have been sued for liability.</p> <p>See https://www.protocol.com/newsletters/protocol-fintech/ooki-dao-cftc-liability as one example</p> <p>Additional suggestions and concerns:</p> <ul style="list-style-type: none"> - Access to participation: Blockchain-based climate solutions can empower underserved communities to participate in carbon markets and benefit from carbon offset programs. However, there is a risk that underserved communities may be excluded from participation if they do not have access to the necessary technology and resources. - Efforts to ensure access to technology and data sovereignty must be a part of the solution to ensure participation of all stakeholders. - Increased surveillance: Blockchain-based climate solutions can be used to track carbon emissions and energy consumption. However, there is a risk that this data could be used to surveil underserved communities. <p>The following are some ways to mitigate the risks of blockchain for underserved communities:</p> <ul style="list-style-type: none"> - Ensure that blockchain-based climate solutions are designed with underserved communities in mind. This includes making sure that the solutions are accessible and affordable, and that they provide benefits to underserved communities. - Implement safeguards to protect the privacy of data collected. This could include using encryption and anonymization techniques. - Ensure privacy of individuals also includes the ability to verify authenticity of identities by trusted third parties. This is likely the trickiest of all issues as transparency and privacy are juxtaposed. However, with proper use of DID and web3 credentials, we can address some of these issues. - Educate underserved communities about blockchain and its potential benefits and risks. This will help underserved communities to make informed decisions about whether or not to participate in blockchain-based climate solutions.
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	<p>Other suggestions:</p> <ul style="list-style-type: none">- Recognize the need for and ensure international cooperation to support the development and adoption of blockchain for climate action. This is an important challenge, as climate change is a global problem that requires a global solution.- Provide training and education on blockchain-based solutions to all stakeholders. This will help to ensure that everyone has the knowledge and skills necessary to participate in and benefit from these solutions.- Enable mechanisms to permit reports of forced labor and displacement and the ability for organizations working on these issues to verify these claims. As we build autonomous systems, it is critical to ensure the well-being of all people and to integrate safeguard systems to protect persons and their homes.- Resource requirement reality check: The resources to manage governance in such a global system are great. In developing such a system, there also needs to be remuneration for participants on behalf of the public good that protects the integrity of the system. Methods to address the often-exorbitant funding by lobbyists in this system and the tendency of social gaming by marketers are key and will be the greatest challenge as watchdogs and the NGOs serving on the front line are often underfunded.- Hackers injecting malicious code is another critical point to address with the requirement of white hat technologists to consistently update virus scanners and processes to address injected code that can be harmful when downloaded. Mechanisms to address malicious code are important to the safety of all, yet are juxtaposed to the methodology required for authentic decentralized solutions that require the source to be devoid of a centralized intermediary. Security must be included to address viral activity for the integrity of the system from both a safety concern as well as the reputation of the system itself. <p>Example: https://www.trustwave.com/en-us/resources/blogs/spiderlabs-blog/ipfs-the-new-hotbed-of-phishing/</p>
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Planet Positive 2030 Comments - Patricia Lago

Patricia Lago, Vrije Universiteit Amsterdam, The Netherlands

1. P.85 [Chapter 2, Metrics]

*In terms of **measuring what matters**, it is important that metrics (or sets of metrics) work together to support holistic decision-making, reflect priorities, and clearly align with the outcomes being sought.*

Feedback regarding **measuring what matters**:

A challenge to achieve this, is to define "sound" indicators (KPIs) that link sustainability goals down to the elements that are being measured and monitored and that carry (1) a target fitness function and (2) associated corrective actions. Too often goals are stated but how to measure what to understand if the goals are being designed for, is missing.

I suggest this work as reading, which is meant to help in this direction:

https://www.techrxiv.org/articles/preprint/From_Goals_to_Actions_Providing_Guidance_to_Software_Practitioners_with_KPIs/24057882

This is meant for sustainability goals via software (digital technology) but can be broadly applied.

2. P.87 [Chapter 2, Metrics]

*Accurate, reliable, and consistent measurement and monitoring will be made more practical by **employing technology** and keeping up with enhancements made available by innovation.*

Feedback regarding **employing technology**:

the listed technologies should be used responsibly. I do not find:

- 1- the sustainability footprint of technologies (direct impact) and the related benefits (supported processes/functions, indirect impact)
- 2- standards are too often led by economic/market interest rather than sustainability values. The document mentions standardization as a good thing, but this happens only if it is led by truly socio-ecological values.

3. P.87 [Chapter 2, Metrics]

***Data analysis and storage** using computing power centers and programs (e.g., cloud computing platforms and API providers);*

Feedback regarding **Data analysis and storage**:

a big discussion point is "digital sufficiency" like data cleaning (which should be added), that is, removing data that is not needed anymore, or avoiding duplicates, or implementing smart (aka energy efficient) storage techniques for different types of data (cold, hot, frozen)

4. P.87 [Chapter 2, Metrics]

*Data analysis and storage using computing power centers and **programs** (e.g., cloud computing platforms and API providers);*

Feedback regarding **Programs**:

software (and green software) play a pivotal role for or against sustainability

5. P.270 [Chapter 7, Towns and Cities]

Data center energy consumption needs to be reduced through innovations to cool the data center such as better separation of hot and cool air and liquid cooling of hot components, reducing data movement, moving to photonic from current-driven communication, and moving from volatile to nonvolatile memory.

Feedback regarding text above:

this recommendation focuses only on making the technology itself more energy efficient, but not energy effective. Energy effectiveness means to optimize how the data center is hosting software applications and data, so that the resources needed in the data center are minimized to run software and to manage data. see also <https://coalitieduurzamedigitalisering.nl/> and Verdecchia, R., Lago, P., & de Vries, C. (2022). The future of sustainable digital infrastructures: A landscape of solutions, adoption factors, impediments, open problems, and scenarios. *Sustainable Computing Informatics and Systems*, at <https://www.sciencedirect.com/science/article/pii/S2210537922000889>

6. P.270 [Chapter 7, Towns and Cities]

*The development of open-source software frameworks must be encouraged, standardizing them based on how these technologies can be used with various vendor equipment and systems. **Efforts** like Public Lab376 and the Wilson Center377 should be supported to involve everyone in creating solutions.*

Feedback regarding **Efforts**:

a very interest initiative is the "Cloud of Europe" by Aknostic.com, embracing open-source software, refurbished hardware, significant and transparent metrics <https://aknostic.com/>

7. P.355 [Chapter 10, Human Wisdom and Culture]

Further resources

Feedback regarding **Further resources**:

Give this issue, I want to point to making software (digital) sustainable (energy efficient) by design. further resources:

- Lago, P. (2022). *An Archive of Awesome and Dark Tactics*. Awesome and Dark Tactics. <https://s2group.cs.vu.nl/AwesomeAndDarkTactics/>

- Alcides Fonseca and Rick Kazman and Patricia Lago. (2019). A Manifesto for Energy-Aware Software. *IEEE Software*, 36(6), 79–82.

- Lago, P. (2023). The Digital Society Is Already Here – Pity It Is “Unsustainable.” In I. Vermeulen (Ed.), *Connected World - Insights from 100 Academics on How to Build Better Connections*. VU University Press.