Strong Sustainability by Design

HUMAN WISDOM AND CULTURE

Strong Sustainability by Design - Version 1 (Draft)

Request for Input

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

This draft compendium has been created by committees of the Planet Positive 2030 Initiative[1] that is supported by IEEE Standards Association (IEEE SA). The Planet Positive 2030 Initiative community is composed of several hundred participants from six continents, who are thought leaders from academia, industry, civil society, policy and government in the related technical and humanistic disciplines. At least one hundred fifty members of this community have contributed directly and have worked to identify and find consensus on timely issues.

The document's purpose is to identify specific issues and candidate recommendations regarding sustainability and climate change challenges to achieve "Planet Positivity" by 2030, defined as the process of transforming society and infrastructure by 2030 to:

- Reduce GreenHouse Gas (GHG) emissions to 50% of 2005 emissions by 2030[2]
- Significantly increase regeneration and resilience of earth's ecosystems[3]
- Be well on the path to achieving net zero GHG emissions by 2050 and negative GHG emissions beyond 2050
- Continue to widely deploy technology as well as design and implement new technological solutions in support of achieving technological solutions designed and deployed to achieve "Planet Positivity"

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

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

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

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

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

Details on how to submit public comments are available in the **Submission Guidelines**.

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

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

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

Disclaimers

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

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

A Note on Affiliations Regarding Members of Planet Positive

The language and views expressed in *Strong Sustainability by Design* reflect the individuals who created content for each section of this document. The language and views expressed in this document do not necessarily reflect the positions taken by the universities or organizations to which these individuals belong, nor of IEEE, and should in no way be considered any form of endorsement, implied or otherwise, from IEEE or any of these institutions. Where individuals are listed in a Committee it indicates only that they are Members of that Committee. Committee Members may not have achieved final concurrence on content in this document because of its versioning format and the concurrence-building process of the Planet Positive 2030 initiative. Content listed by Members in this, or future versions is not an endorsement, implied or otherwise, until formally stated as such.

A Note Regarding Recommendations in This Document

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

Our Membership

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

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Human Wisdom and Culture

Future Vision

It is 2030, human wisdom and culture continues to offer emotional and intellectual connections that bind humans together. In 2023 a worldwide cultural evolution emerged as humans across our Earth chose a holistic shift toward intergenerational stewardship of the systems we inhabit and impact on the Earth and re-committed to the ancient human wisdom to again become stewards and caretakers of life and nature. All concepts, designs, and implementations of sustainable and regenerative efforts are now prioritized as being in service to all life, the biodiversity of our Earth, which includes humans.

Introduction

The culture, philosophy, knowledge, values, wisdom, and mindset of any society impact the society's infrastructure and patterns of governance. To prioritize the focus for any sustainable, regenerative, and intergenerational initiatives, transformation of the mindset, culture, and society must come first before any technological and infrastructure transformations are developed or implemented.

A shift in consciousness is needed for a future that re-includes intergenerational stewardship, which aims to seek and situate scientific reductionism or scientific materialism in alignment with non-materialism and healthier ecosystems. These ecosystems include dimensions that can connect humanity to the natural systems of our world and then enable a more holistic engagement with scientific instruments and future thinking to build the future we want.

Human wisdom mindset is not gained solely through 'knowledge and logic' as much as it is received through insight and wisdom, where for brief glimmers, humanity is open to the connection people share with all living beings around them. A part of our humanity has diminished in cultural beliefs and now many prioritize values such as unlimited economic growth, unhealthy competition, and the exercise of primacy will.

In this context, groups of Indigenous peoples[4] continue the culture of connection to Earth and intergenerational stewardship as their communities of practice in ancient traditions of mindfulness and conscious connection to the bigger world around us. Therefore, their threads of ancient human wisdom and culture continue to thrive in the weave of the collective wisdom of societies in our world today.

The deep knowledge of the interconnectedness of all things is held within ancestral (Indigenous) wisdom from generation to generation. Ancestral wisdom holds collective knowledge of the land, sea, and sky and deepens understanding of how life naturally evolves and its impact (i.e., climate change) on livelihoods, cultures, and ways of life. It provides the concrete context of communities in relation to the environment and provides practical solutions on how to adapt. It offers examples of how to act sustainably and regeneratively to co-create conditions for life to continuously evolve.

Therefore, human wisdom involves integrating ancestral wisdom and modern wisdom to protect the planet and all life's existence that humans depend on while advancing into the future of human prosperity and sustainable development. *Intergenerational* and *stewardship* are two words that capture this intention of being a steward of the systems of nature in our lifetimes to preserve, protect, and regenerate those systems to leave for the generations to come.

Finally, we recognize that an effort should be made to preserve and promulgate these advanced skills, applied science, and planet-positive initiatives, as well as to explore how integrating them into our human development cycle(s) could be beneficial in solving technology challenges facing our current and future societies. We recognize that a human element has been missing.

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[4] When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

This chapter focuses on Indigenous wisdom and the cultures to be considered, included, and asked about, outlining the process through mindset, story, and human experience. This chapter's focus on "technology" is that which comes from nature.

Issue: Lack of an expanded mindset of the impact of humans on the evolution of earth

Background

Humans have evolved from living species that existed and evolved during the 4.5 billion-year history of the earth. Earth itself evolved within the 13.7 billion years of the universe's evolution.
In the last 0.4 billion years (400 million years), five extinction events occurred that scientists are aware of, and at every extinction, approximately 70% to 95% of all living species died. The last extinction eradicated all the dinosaurs. Another mass extinction age is now upon us. The ability of the changing systems of nature to continue to support the biodiversity of life on Earth has irreversibly altered in the 70 years between 1950 and 2020. In that same space, the human population has grown from 2.6 billion in 1950 to 8 billion in 2023. Our thinking must now evolve in our new reality. Intergenerational stewardship thinking is needed more than ever before.

In the context of the regenerative lifecycle of life, it seems that death and life are inherently interconnected within Earth's evolution in which death becomes compost for the new.

Humans (*homo sapiens*) only came into existence 200,000 years ago, a microsecond before midnight if Earth's evolution of 4.5 billion years were equal to a 24-hour clock. It took more than 4 billion years of our ancestors evolving, all living species, for humans to come into existence.

The traditional ancestral (Indigenous) wisdom and life pathways, such as those from the Aboriginals of the earth, are carers of the earth who are less alienated from the earth and have not forgotten traditional wisdom. They recognize their place in the history of Earth, and as such, they live accordingly as caretakers of life and nature, in other words, as intergenerational stewards.

Indeed, human wisdom is new in the greater scheme of the earth's 4.5 billion evolution. Yet, we have a misconception that humans are the dominant species on Earth, with the illusion of control over, and separation between, human life and nature.

In the last 10,000 years, technology has advanced rapidly. The advent of farming and agriculture transformed Earth's natural landscapes, locally and globally. As humans settled down because they could now produce their own food and increase its availability, human civilization flourished, and the human population began to increase dramatically.

Recommendations

Changing any ecosystem requires a critical mass of its influential participants to change consciousness so that the new system is not informed only by the mindset and culture that created the old system and to enable a tipping point into the new. Humans need to unlearn the illusion that humans control the complexity of nature and are separate from nature and the evolution of the systems of our Earth. We must guide human culture and consciousness shifts so that humans feel and know ourselves to be part of nature, as well as guardians and caretakers of life and nature:

- Transform consciousness: One needs to make the system visible to itself for the system and its participants to co-create a new system, with a shift in consciousness.

- Learn from the existing caretakers of life and nature: Indigenous peoples (Aboriginals), their wisdom, and life pathways.

- Recognize humans as part of nature: Experiment and embrace a culture in all our thinking, being, and doing that is aligned with the flourishing lifecycle of life and nature.

Technological Insights and Recommendations

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

Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior and Informed Consent.

1. Carbon, Claus-Christian. "Understanding Human Perception by Human-Made Illusions." *Front Hum Neurosis* 8 (July 2014): 566.

2. Dutfield, Scott. "The 5 Mass Extinction Events That Shaped the History of Earth—And the 6th That's Happening Now." How It Works, 17 May 2016.

3. Gray, John. "An Illusion with a Future." *Dædalus Journal of the American Academy of Arts & Sciences* (Summer 2004): 10.

4. National Geographic. "Age of Earth Collection." Education.

5. Oliver, Tom. "The Illusion of Individualism Helped Us Succeed As a Species—But Now the Scales Are Tipping." *BBC Science Focus*, 7 Mar. 2020.

6. Peebles, P. James E., David N. Schramm, Edwin L. Turner, and Richard G. Kron. "The Evolution of the Universe." *Scientific American* 271, no. 4 (Oct. 1994).

7. Ralls, Eric. "The History of Earth in Exactly 2000 Words." Earth.com.

8. White, Leslie A. "Man's Control over Civilization: An Anthropocentric Illusion." *Scientific Monthly* 66, no. 3 (Mar. 1948): 235–247.

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Issue: Need a new narrative to understand the perspective of our common regenerative and sustainability story

Background

As humans we love stories. Stories uphold our social systems, help us find a common understanding, and support trust. The systems destroying our planet are also upheld by a story continually reinforced in our culture, as well as in our media. Stories can also be used to promote misinformation.

If society can find a way to change our collective story, we can change our collective consciousness. Joseph Campbell's *The Hero's Journey* revealed the commonalities in our human journey through tracing the commonalities in the myths of cultures throughout the world. We can attempt to change our broken system by charting the similarities in the human experience to bring about a changed mindset and collective consciousness as it relates to our common regenerative sustainability story.

In parts of the world that some call the *West*, we often see a dominant and globalized understanding of our economic system, money, and capitalist system in which we all are involved. This can be described as a global story, yet other stories are common to us all, which are found in all cultures with varying twists.

Recommendations

Working collectively, we can identify similarities of sustainability issues in varying countries and communities to create a common story that supports a shift in our understanding of our relationships to all life. Doing so may also help to shift our collective story from one that prioritizes unlimited growth and exploitation of life to a story that does not recommend growth at all costs and prioritizes a harmonious ecosystem:

- Adapt the hero's journey template/methodology to chart the journey we are going through with a view to a positive sustainable transformation.

- Use story to enable new consciousness. Human brains release pleasure chemicals and engage differently with story than with unconnected information. The use of story to engage humans connects us more holistically to new information.

- Set a pattern to guide humans, at scale, to explore and learn for themselves the connections to nature, through story, and the connections emotionally and intellectually to intergenerational stewardship concepts that will contribute to the shift we need to create in the world. Human beings take ownership in what they create and discover, more than in things handed to them.

- Share and socialize this story with other organizations, while allowing for feedback from others to refine it and help to change mindsets toward enabling collective and sustainable change.

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

Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior and Informed Consent.

1. Bekhrad, J. "The 100 Stories That Shaped the World." *BBC*, 2018.

2. Bernier, Andrew. "Sustainability Storytelling is Not Just Telling Stories About Sustainability." *Reference Module in Earth Systems and Environmental Sciences*, 2019.

3. Cajete, Gregory A. "Children, Myth, and Storytelling: An Indigenous Perspective." *Global Studies of Childhood* 7, no. 2 (June 2017): 113–130.

4. Campbell, Joseph (1990) A Hero's Journey

5. Chan, Adrienne S. "Storytelling, Culture, and Indigenous Methodology." In *Discourses, Dialogue and Diversity in Biographical Research, An Ecology of Life and Learning*, edited by Alan Bainbridge, Laura Formenti, and Linden West. Leiden and Boston: Brill Sense, 2022.

6. Diaz, Clarisa. "How Can Indigenous Knowledge Help Us Create Sustainable Food Systems?" World Economic Forum, 3 Dec. 2021.

7. Fernández-Llamazares, Álvaro, and Mar Cabeza. "Rediscovering the Potential of Indigenous Storytelling for Conservation Practice." *Conservation Letters: A Journal of the Society for Conservation Biology* (Sept. 2017).

8. Hofman-Bergholm, Maria. "Storytelling as an Educational Tool." *Sustainable Education Sustainability* 14, no. 5 (2022): 2946.

9. Iseke, Judy. "Indigenous Storytelling as Research." *International Review of Qualitative Research* 6, no. 4 (Winter 2013): 559–577.

10. Robson, David. "Our Fiction Addiction: Why Humans Need Stories." *BBC*, 2018.

11. Starovoitov, Sasha. "Narrating Landscapes: How Indigenous Storytelling Can Unlock Our Environment's Past." *GlacierHub* (blog), *Columbia Climate School*. 2 Sept. 2021.

12. UN Department of Economic and Social Affairs. ST/ESA/328. *State of the World's Indigenous Peoples*. New York: United Nations, 2009.

13. Wedner, Franzisca, Amornpan Tungarat, and Stella Lemke. "Sustainability as Cognitive 'Friction': A Narrative Approach to Understand the Moral Dissonance of Sustainability and Harmonization Strategies." *Front. Commun.* 5 (Feb. 2020).

Issue: Need for a wisdom-centric philosophy

Background

The climate crisis that has engulfed today's society is the result of the continuous desire of human beings to "move forward" without being aware of the nature around them. Hence, we have an urgent need to bring about a radical change in the philosophy underlying this worldview by putting nature before thinking about self. The harmonious integration between human beings and nature is possible when the entire universe is seen as one single family, including the ecosystem comprising myriad flora and fauna.

Recommendations

We need to provide education at multiple levels and institutions globally, beginning at young ages that demonstrates how caregiving-oriented economics and sustainability lead to a shift in consciousness and action leading to holistic planetary and human health:

- When making a decision that has a bearing on nature, include the latter in the discussions in the initial stages.

- Servant Leadership: When devising a strategy, look at the world from a broader perspective instead of looking at it through a narrow and hollow "self-centered" lens.

- Consider biodiversity exploration in design and organizing principles for any organization, project, product, or service. Consider nature as a stakeholder in any analysis of the strengths, weaknesses, opportunities, and threats of projects and designs.

- Adopt a holistic approach to your work, considering impacts to the rest of the natural world and how the rest of the natural world interacts with you in your work.

Technological Insights and Recommendations

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

Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior and Informed Consent.

1. Al Madani, Amr. "What Can Ancient Wisdom Teach Us about Sustainability?" World Economic Forum, 4 Mar. 2022.

2. Borah, Surjya Kamal. "Ancient Indian Wisdom and Sustainable Development." *Quest: The Journal of UGC-HRDC Nainital* 6, no. 3 (Jan. 2012).

3. Intezari, Ali. "Integrating Wisdom and Sustainability: Dealing with Instability." *Business Strategy and the Environment* 24, no. 7 (Nov. 2015): 617–627.

4. First draft of the Post-2020 Global Biodiversity Framework.

Issue: Counterposition of traditional to technological thinking

Background

A consistent bias often exists in decision-making processes in which most problem–solution efforts must be dualistic (one or the other), simplifying options to either traditional human wisdom or modern (technological) wisdom. Indeed, much of modern technology has as its foundation traditional human wisdom and in varied forms continues to be influenced by it.

Recommendations

We must work via transdisciplinary means with diverse population representation to identify how communities can endorse, promote, and embrace integrated efforts. Cognitive diversity is a primary means to implement sustainable solutions where both human and technology wisdom can synchronize and human wisdom itself can be viewed as a key underpinning for technology in itself:

- Promote active participation/workshops in learning and preserving traditional peaceful behaviors by individuals and societies. Particular attention should be given to human responsibilities/roles applied by First Nations and Indigenous peoples, especially those that could be scalable to other communities and processes. The unique perspectives of First Nations and Indigenous people emerge from their perspective which has not been alienated from traditional knowledge for hundreds or thousands of years.

- Train and empower decision makers in the art and science of consensus building. Working through disagreements to creative thinking is not intuitive to modern human cultures. The binary approach of thinking and deciding is both a human and a technological standard. Either/or may not always be superior to a both/and outcome.

- Learn from the past. This concept applies to hard (technical) skills, as well as to soft skills, such as human wisdom.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

- Foster intergenerational work to learn across generations and to build intergenerational co-creation and stewardship, respecting biodiversity in thinking in those intergenerational conversations, explorations, projects, and mentoring and learning relationships.

Technological Insights and Recommendations

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

Further resources

1. Grant, Adam. Think Again: The Power of Knowing What You Don't Know. Penguin Random House, 2021.

2. Hodgkin, R. A. "Techne, Technology and Inventiveness." Oxford Review of Education 16, no. 2 (1990): 207–17.

3. "Indigenous-Led Tech Solutions for a Better Planet." ITU News, 2021.

4. Morales, Gerardo E. El libro de losMamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica[The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony]. Kindle edition, 2016.

5. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. Pueblo Iku: Science, Nature and Art of the Arhuaco. 2020.

Issue: Failure to consider "I am because we are" - Ubuntu philosophy

Background

Ubuntu is a Nguni word that means "I am because you are" and originates from southern Africa. A person's identity is linked to others, especially to the community. This concept is urgently needed in our current sustainability crisis.

As an example, picture a small town where a group of neighbors decide to transform an empty plot of land into a community garden. Each person contributes something - one brings seeds, another brings tools, another has knowledge about irrigation, another can build benches and sheds. As they work together, the garden begins to flourish, providing fresh produce for everyone involved.

This garden could not have come into existence without the collective effort of the community. Each individual is not just a neighbor, but a gardener, a teacher, a builder. Their identities are interlinked with each other and with the garden they've created together. They are because the garden is, and the garden is because they are.

In the context of sustainability, the garden helps to reduce food miles, promotes biodiversity, and provides a local source of fresh produce. The garden thrives because of the community, and the community thrives because of the garden. This is the essence of Ubuntu - the interdependence of individuals and their environment, and the shared responsibility of ensuring its sustainability.

Recommendations

We need to design a methodology that incorporates Ubuntu for sustainability:

- Explain through a type of system thinking how those who perpetuate the most harm will also be severely affected.

- Move beyond the old ways some Western cultures used as dehumanizing perspectives.

- Guide experiential learning across organizations as part of the strategic decision-making process to engage leaders in these new patterns of thought and reinforce, through success stories, examples of when this way of thinking benefits the current situation: organizations, societies, employees, colleagues, customers, clients, stakeholders (including the rest of nature), and the generations of all of those who will follow.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. Chibvongodze, Danford T. "Ubuntu is Not Only about the Human! An Analysis of the Role of African Philosophy and Ethics in Environment Management." *Journal of Human Ecology* 53, no. 2 (Oct. 2017): 157–166.

2. Chigangaidze, Robert K. "Environmental Social Work through the African Philosophy of Ubuntu: A Conceptual Analysis." *International Social Work* (Mar. 2022).

3. Church, Jacqueline. *Sustainable Development and the Culture of uBuntu*. Jan. 2012.

4. Crippen, Matthew. "Africapitalism, Ubuntu, and Sustainability." *Environmental Ethics* 43, no. 3 (2021): 235–259.

5. Etieyibo, Edwin. "Ubuntu and the Environment." In *The Palgrave Handbook of African Philosophy*. Edited by Adeshina Afolayan and Toyin Falola. New York: Palgrave Macmillan, 2017.

6. Gwaravanda, Ephraim Taurai. "Ubuntu Environmental Ethics: Conceptions and Misconceptions." In *African Environmental Ethics*. Edited by Munamato Chemhuru. *The International Library of Environmental, Agricultural and Food Ethics* 29. Springer, Cham (May 2019).

7. Mhlambi, Sabelo. *From Rationality to Relationality: Ubuntu as an Ethical and Human Rights Framework for Artificial Intelligence Governance*. Harvard Kennedy School: Carr Center Discussion Paper Series, 8 July 2020.

8. Shumba, Overson. "Commons Thinking, Ecological Intelligence and the Ethical and Moral Framework of Ubuntu: An Imperative for Sustainable Development." *Journal of Media and Communication Studies* 3, no. 3 (Mar. 2011): 84–96.

9. Terblanché-Greeff, Aïda C. "Ubuntu and Environmental Ethics: The West Can Learn from Africa When Faced with Climate Change." In *African Environmental Ethics*. Edited by Munamato Chemhuru. *The International Library of Environmental, Agricultural and Food Ethics* 29. Springer, Cham (May 2019).

10. Tutu, Desmond (Archbishop Emeritus). "Eco-Ubuntu." Enviropaedia: Rethinking Reality. 2017.

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Issue: Global North dominance in policy and technology

Background

As native communities and First Nations have been the earth's caretakers for the longest time, their vast knowledge and expertise are crucial for a sustainable future. However, there can be a bias towards "human wisdom" being defined by global or developed nations. The language of many Indigenous or marginalized populations is often not even acknowledged by these bodies, thereby immediately ostracizing them from any efforts toward sustainability and the applicability of their valued experience. For instance, most efforts regarding sustainability do not recognize, nor are aware of, the seminal knowledge First Nations stewards can bring as noted in documents like the 6th Assessment report of the UN IPCC.

The global North generally includes the United States, Canada, England, nations of the European Union, as well as Singapore, Japan, South Korea, and even some countries in the Southern Hemisphere, such as Australia and New Zealand.

Recommendations

We must prioritize the inclusion of wisdom from regions outside of the global North in all "global" efforts, including the teaching of philosophy, ethics, and economics, as well as these areas in any "global" institution:

- Start every human gathering with the ancient human tradition of land acknowledgment. When conducting any meeting on known traditional Indigenous territories, the simple act of recognizing those traditional territories and people's names demonstrates respect and connection to the thousands of years of human connection in that place and invokes ancient human wisdom of connection to place and the earth.

- Include the active participation of First Nations and Indigenous communities when defining "human wisdom" guidance/manuals/concepts.

- Promote active participation/workshops in learning and documenting traditional peaceful behaviors by individuals and societies. Pay particular attention to human responsibilities/roles applied by First Nations and Indigenous peoples, especially those that could be scalable to other communities and processes.

- Implement history and human wisdom educational and recovery programs. Knowing what has worked or what hasn't worked in other communities, and/or in different times in history. These programs should help us acquire more experience and skills to resolve our current and future tasks at hand. This concept applies to hard (technical) skills, as well as to soft skills, such as negotiation.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea ofhttps://www.ohchr.org/sites/default/files/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdfFree, Prior and Informed Consent.

1. Azar, B. "Are your findings 'WEIRD'?" *Monitor on Psychology* (American Psychological Association) 41, no. 5 (May 2010).

2. Morales, Gerardo E. *El libro de los Mamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica*[*The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony*]. Kindle edition, 2016.

3. Native Land Digital (website).[5]

4. Odeh, Lemuel Ekedegwa. "A Comparative Analysis of Global North and Global South." *Journal Sustainable Development in Africa* 12, no. 3 (2010).

5. Pörtner, Hans-O, Debra C. Roberts, Helen Adams, Carolina Adler, Paulina Aldunce, Elham Ali, Rawshan Ara Begum, et al. "IPCC 2022: Summary for Policymakers." *In Climate Change 2022: Impacts, Adaptation and Vulnerability.* Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK and New York: Cambridge University Press, 2022.

6. Reidpath, Daniel D., and Pascale Allotey. "The Problem of 'Trickle-Down Science' from the Global North to the Global South." *BMJ Global Health* 4 (July 2019).

7. Sabzalieva, Emma, Magdalena Martinez, and Creso Sá. "Moving Beyond 'North' and 'South': Global Perspectives on International Research Collaborations." *Journal of Studies in International Education* 24, no. 1 (Feb. 2020): 3–8.

8. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. *Pueblo Iku: Science, Nature and Art of the Arhuaco*. 2020.

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[5] This online resource provides an online guide to traditional territories—curated and maintained by Indigenous leaders.

Issue: Deliberate resource extraction and growth prevalence exists in global policy and technology design

Background

Resource extraction has more than tripled since 1970, including a fivefold increase in the use of non-metallic minerals and a 45 percent increase in fossil fuel use. By 2060, global material use could double to 190 billion tons (from 92 billion), while greenhouse gas emissions could increase by 43 percent. The extraction and processing of materials, fuels, and food contribute half of total global greenhouse gas emissions and over 90 percent of biodiversity loss and water stress.[6]

Recommendations

Urgent transition is needed in multiple technical fields, including in energy production; the design and installation of the built environment; the manufacturing of goods and materials for human consumption, particularly new transportation, communication, and technology devices; metrics, and global methodologies; as well as in many other fields to shift from a mindset and practice of extraction toward giving back more than what we take to promote circularity and intergenerational stewardship thinking.

These technical recommendations will have minimal effect, however, if a conscious human behavior change doesn't occur, and such change must occur from within each individual and collectivity (social group). Having a deep auto-evaluation of our acts, the consequences on the environment and other generations, as well as of our own tolerance for the uncertainties, is our path to wisdom, and so it will be required for the survivability of our human species.

The time to act is now (or more appropriately 30 to 50 years ago). Nature will continue its evolution process with or without humans. We must extend our positive impact and tenure in this land.

We must do the following:

- Consider the work of William McDonough and Michael Braungart, in their seminal work "Cradle to Cradle," who lay out principles for circular design and production. Encourage the global community of designers and builders of all things that consume materials to consider circularity and these principles.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

- Implement land/natural resources recovery programs hopefully in underserved communities and natural biodiversity-protected areas.

- Implement intergenerational stewardship and circular economy design principles in all things that humans design, build, manufacture, and consume, with a cradle-to-cradle and regenerative approach built in.

- Consider, promote, and prefer rural, simple applications with scalable potential over more technologically "advanced" options that may take longer to be implemented.

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[6] UN Environment Programme, "We're Gobbling up the Earth's Resources at an Unsustainable Rate," 3 Apr. 2019, https://www.unep.org/news-and-stories/story/were-gobbling-earths-resources-unsustainable-rat.

- Review these concepts through intergroup exploration to scale the adoption of this thinking with government agencies in collaboration with nongovernmental organizations (NGOs), industry partners, communities, academic institutions, and indeed any group of leaders and influencers willing to promote the value of these ideas.

Technological Insights and Recommendations

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

Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of https://www.ohchr.org/sites/default/files/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdfFree, Prior, and Informed Consent.

1. Kallis, Giorgos. "In Defence of Degrowth." *Ecological Economics* 70, no. 5 (Mar. 2011): 873–880.

2. McDonough, William. *Net-Positive: Waging Peace Through Commerce by Design.* 1st ed. McDonough Innovation, 2022.

3. McDonough, William, and Michael Braungart. *Cradle to Cradle: Remaking the Way We Make Things.* 1st ed. North Point Press, 2002.

4. Morales, Gerardo E. *El libro de los Mamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica*[*The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony*]. Kindle edition, 2016.

5. Polman, Paul, and Andrew Winston. *Net Positive: How Courageous Companies Thrive by Giving More Than They Take*. 1st ed. Boston, MA: *Harvard Business Review Press*, 2021.

6. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. *Pueblo Iku: Science, Nature and Art of the Arhuaco*. 2020.

Issue: Lack of creativity arts and culture in representing planetary themes

Background

Human/social wisdom should extend beyond "technical" solutions to include the arts, culture, and social pillars, going beyond science, technology, engineering, and math (STEM). Unfortunately, on top of limited exposure and promotion, arts, culture, and other soft skills, like languages and natural sustainable vision, are complex concepts and practices with contested definitions and multiple histories across different geographical regions. Therefore, a considerable effort should be made to recognize these disciplines and their potential value add when trying to solve local community and global issues.

Recommendations

As art, culture, languages, and other soft skills could improve pathways to proper implementation of STEM projects/applications in diverse communities worldwide, the following recommendations should be considered:

- Promote the inclusion of arts, humanities, and culture in general as equal partners and co-creators in the development of goals and solutions.

- Identify, document, and promote existing STEM + arts and culture (STEaM) programs and/or applications.

- Learn from past sustainable innovations that would not exist without being led by and involving the arts, humanities, and culture.

- Foster education and communications programs for intergenerational stewardship that include STEaM to illuminate, expand thinking, excite the imagination, engage hearts, and make visual and emotional connections between the art and science needed for the regenerative and at-scale solutions that we need.

Technological Insights and Recommendations

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

Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. Clarke, Marie. "STEM to STEAM: Policy and Practice." In *The STEAM Revolution*. Edited by A. de la Garza and C. Travis. Springer, Cham (Oct. 2018).

2. Huutoniemi, Katri, Julie Thompson Klein, Henrik Bruun, and Janne Hukkinen. "Analyzing Interdisciplinarity: Typology and Indicators." *Research Policy* 39, no.1 (Feb. 2010): 79–88.

3. Kania, Krzysztof, Catherine Lemaire, and Lena Swinnen, eds. *Integration of Social Sciences and Humanities in Horizon 2020: Participants, Budget and Disciplines: 4th Monitoring Report on SSH Flagged Projects Funded in 2017 Under the Societal Challenges and Industrial Leadership Priorities*. European Commission Directorate-General for Research and Innovation. Luxembourg: Publications Office of the European Union, 2019.

4. Karlqvist, Anders. "Going beyond Disciplines: The Meanings of Interdisciplinarity." *Policy Sciences* 32, no. 4 (1999): 379–383.

5. Taylor-Wesselink, Keisha, and Doireann Wallace. "Draft System of Preconditions for Successful Arts, Humanities and Social Sciences Integration." *SHAPE-ID: Shaping Interdisciplinary Practices in Europe* (July 2021).

6. Vienni Baptista, Bianca. "Reconfiguring Interdisciplinary and Transdisciplinary Spaces for Arts, Humanities and Social Sciences Integration." *RevistaEducaonline* 15, no. 2 (May/Aug. 2021).

7. Evans, Rob and Jonah Evans. *The Collaboration Code: 2021 Casebook.* 1st ed., 2022.

8. Krystianne Avedian, Sue Culkins, Andy Heppelle - "Art of the Possible - Mindfulness, Mental Well Being, Emotional Innovation, Holistic thinking"

Issue: Failure to expand knowledge with respect and appreciation for other cultures and their wisdom

Background

Copying others is a powerful way to honor their people, culture, skills, and overall wisdom. This practice also establishes a close and harmonious relationship in which people or communities are in "sync" with each other, and even with the environment, if the proper guidance is given or copied.

Unfortunately, this goal is not always altruistic, and in many cases, conflict and violence erupt when parties appropriate or don't respect each other's cultural roots and differences. Therefore, an effort is to be made to avoid conflict and simply focus on the added value that others can have in processes and thoughts. After all, we are all humans, and as such, we are just one. There are no "others" and "us"; there is just "all of us."

Recommendations

A continuous effort needs to be made to promote well-rounded skills, techniques, and social interactions based on peace and ecological harmony. The intent should be to promote local soft skills with a regional, well-founded, and proven basis that could have global scalable potential.

The foundational skills of achieving agreement consist of the use of appreciative inquiry techniques. Improving the use of open-ended questions, active listening, restatement for clarification, seeking commonality, and building creative solutions are the primary tools used to "manage the conflict" of disagreement.

The key premise should be doing this (incorporating the added value of other cultures and their wisdom) in peace, with respect to others, avoiding conflict, and looking toward humanity's future direction and survival:

- Implement history and human wisdom educational and recovery programs. They are knowing what has worked or what hasn't worked in other communities, and/or at different times in history. These programs should help us acquire more experience and skills to resolve our current and future tasks at hand. In other words, having more "tools" in your "tool bag" will make your work easier. This concept applies to hard (technical) skills, as well as to soft skills, such as negotiation.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

- Create avenues for keepers of Indigenous wisdom to be leaders and owners of processes and their outcomes in ways that allow for non-exploitative communal benefit.

Technological Insights and Recommendations
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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior and Informed Consent.

1. Cialdini, Robert. *Pre-Suasion: A Revolutionary Way to Influence and Persuade*. New York: Simon & Schuster, 2018.
2. Fisher, Roger, and William Ury. *Getting to Yes: Negotiating Agreement Without Giving In.* 3rd ed. Penguin Books, 2011.

3. Morales, Gerardo E. *El libro de losMamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica*[The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony]. Kindle edition, 2016.

4. Stone, Douglas, Bruce Patton, and Sheila Heen. *Difficult Conversations: How to Discuss What Matters Most*. Penguin Books, 2010.

5. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. *Pueblo Iku: Science, Nature and Art of the Arhuaco*. 2020.

Issue: Productivity over purpose should not be the focus

Background

Having a purpose in life, according to the science of *positive psychology*, provides a great foundation for a productive, meaningful impact in our societies. Individuals and societies with deeper ethical or moral values and self-conscious discipline of serving others while supporting sustainable growth have the proven ability to maintain healthy social communities in harmony with others and with less damaging effects on the environment. Recent ideas in net-positive thinking have been published by Paul Polman and Andrew Winston in their book *Net Positive*. They encourage leaders to embark on a journey of long-term thinking that focuses attention on the whole system being impacted by decisions being made. They challenge leaders to work in ecosystems of purpose to regenerate and give back to the ecosystems that have sustained life on this planet. They map a way forward for us all to engage in the world around us, applying patterns of decision, and taking that "give back more than you take" from the world around you.

Recommendations

A conscious effort should be made to identify and promote role models, focusing on higher standards of peaceful living, collaboration, and respect for each other's point of view. Current diversity and inclusion initiatives can gain guidance from native and First Nations' wisdom, based primarily on cultures of peace and ecological harmony. These efforts can be coupled with a focus on the science of positive psychology that has proven how practices of meditation, kindness, and "flow" (living to your purpose).

In addition, a net-positive context should be applied to every organization, designing and taking action for the long-term, holistic well-being of all parts of the systems impacted by the human-managed organizations of our world. Intergenerational stewardship for the children in the current generation and for the seven generations to come must be considered key stakeholders in this work:

- Promote active participation/workshops in learning and documenting traditional peaceful behaviors by individuals and societies. Pay particular attention to human responsibilities/roles applied by First Nations and Indigenous peoples, especially those that could be scalable to other communities and processes.

- Implement history and human wisdom educational and recovery programs. Knowing what has worked or what hasn't worked in other communities, and/or at different times in history. These programs should help us acquire more experience and skills to resolve our current and future tasks at hand. This concept applies to hard (technical) skills, as well as to soft skills, such as human wisdom.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

- Enlist communities of the willing across public–private partnerships to spread human wisdom through models like those described in *Net Positive*, ideas that call us all to design with heart, with purpose, with the long term of future generations of all life on Earth, allowing us to release human energy for an inclusive and sustainable future.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior and Informed Consent.

1. Morales, Gerardo E. *El libro de losMamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica*[*The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony*]. Kindle edition, 2016.

2. Polman, Paul, and Andrew Winston. *Net Positive: How Courageous Companies Thrive by Giving More Than They Take*. 1st ed. Boston, MA: *Harvard Business Review Press*, 2021.

3. Taylor, Matt, and Gail Taylor. "MG Taylor Modeling Language. Explore the Models." MG Taylor Corporation, 17 Apr. 1997.

4. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. *Pueblo Iku: Science, Nature and Art of the Arhuaco*. 2020.

5. "Well-being." Chap. 4 in *Ethically Aligned Design*. IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, 2019.

Issue: Failure to promote a commons approach for a shared resources and asset-based approach

Background

Asset-based community development (ABCD), or asset-based community-driven development, is a bottom-up, community-driven way of working that focuses on community strengths and assets rather than on lack of resources and problems.

Assets are seen as more than just money and can be micro in scale. If someone needs a lift and another person needs help with their taxes, they can exchange and barter for a more sustainable outcome for all. These interactions develop a mindset of sustainability with better well-being for all people, and also potentially the environment. ABCD is rooted in an asset mindset rather than a deficit mindset, rejecting a simple accounting approach, that everyone lives on this planet with an abundance of assets (not necessarily financial) that can support and help others.

Furthermore, the Nobel prize winner Elinor Ostrom found that collective action can be effective when using a common-pool resource (CPR). This open-access resource environment or domain may benefit all for the social well-being of a particular community.

Recommendations

Use ABCD to identify existing resources and strengths versus only what is lacking:

- Use this methodology of asset-based community for changing mindsets on what are assets and for supporting and developing community and encouraging bartering and exchange of goods and services.

- Look at experimenting with a local commons approach within community-driven initiatives.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. DePaul University. Asset-Based Community Development Institute (ABCD) (website).

2. Nordman, Erik. "Crises of the Commons: Elinor Ostrom's Legacy of Self-Governance." *Centre for the Study of Governance & Society* (blog). King's College London. Last updated 8 June 2022.

3. Nurture Development. Asset Based Community Development (ABCD) (website).

4. Svizzero, Serge, and Clement Tisdell. "Barter and the Origin of Money and Some Insights from the Ancient Palatial Economies of Mesopotamia and Egypt." Working Paper No. 81, Economic Theory, Applications and Issues. HAL Open Science. The University of Queensland, Australia, July 2019.

Issue: Ignoring existing caretakers of the planet who use expert ecosystem regeneration, restoration, and maintenance efforts that include intergenerational stewardship thinking and design in all things

Background

One of the main responsibilities of humans is to be caretakers of our planet, not just the appropriators or exploiters of natural resources for what is usually seen as a financial short-term gain. The sooner we realize this purpose, of caretakers of the land/nature, the sooner we can work on the solutions and changes needed for our survival.

Currently, 80% of natural resources and biodiversity are under the care of 5% of the people, most of them First Nations and Indigenous peoples. And even though these communities have the expertise, and tens of thousands of years of skills, modern industries, political divisions, and many other elements keep these communities marginalized, underestimated, and in many cases even under the constant pressure of colonization and cultural alienation.

Recommendations

We need to consciously listen to and emulate the role of Earth's caretakers, including the provision of proper scenarios for the First Nations and Indigenous peoples to play their valuable role in global sustainability:

- Promote active participation/workshops in learning and documenting traditional farming methodologies, cultural/social behaviors, and human responsibilities/roles by First Nations and Indigenous peoples, especially those that could be scalable to other communities and processes.

- Implement history and human wisdom educational and recovery programs. Knowing what has worked or what hasn't worked in other communities, and/or at different times in history. These programs should help us acquire more experience and skills to resolve our current and future tasks at hand. This concept applies to hard (technical) skills, as well as to soft skills, such as human wisdom.

- Offer outreach educational programs on human wisdom, acknowledgment, and realization of deeper self-knowledge and on our impact on others and the environment.

- Foster intergroup learning and co-creation opportunities with leaders at all community levels from local school board to city, province, state, region, and national agencies and leaders who are able to learn from and incorporate thinking and patterns of being from Indigenous communities and other communities that foster holistic thinking practices.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of https://www.ohchr.org/sites/default/files/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdfFree, Prior, and Informed Consent.

1. McDonough, William. *Net-Positive: Waging Peace Through Commerce by Design.* 1st ed. McDonough Innovation, 2022.

2. McDonough, William, and Michael Braungart. *Cradle to Cradle: Remaking the Way We Make Things.* 1st ed. North Point Press, 2002.

3. Morales, Gerardo E. *El libro de losMamus: Apuntessobre la historia, la geografía y la sabiduría de unacultura de paz y armoníaecológica*[*The Book of the Mamus: Notes on the History, Geography and Wisdom of a Culture of Peace and Ecological Harmony*]. Kindle edition, 2016.

4. Polman, Paul, and Andrew Winston. *Net Positive: How Courageous Companies Thrive by Giving More Than They Take*. 1st ed. Boston, MA: *Harvard Business Review Press*, 2021.

5. Sena, Kanyinke. "Recognizing Indigenous Peoples' Land Interests Is Critical for People and Nature." World Wildlife Fund (WWF), 22 Oct. 2020.

6. Vega Jánica, Ernesto, Hugues Vega Murgas, and Simón Esmeral Ariza. *Pueblo Iku: Science, Nature and Art of the Arhuaco*. 2020.

Issue: Need to create a stage for new leaders to position vulnerable and marginalized communities as leaders in developing sustainable solutions

Background

In most cases, vulnerable/marginalized communities have faced deep challenges regarding basic needs, such as the needs for clean water, food, education, clothing, communications, and more. They also suffer from natural disasters like earthquakes, volcano eruptions, and storms, with a lot fewer resources and less advanced notice as better developed societies. These especially challenging conditions often require the most creative, simple (from the manufacturing and sourcing point of view), and timely solutions mainly because of the lack of resources and the urgency to resolve the tasks promptly.

Recommendations

As vulnerable/marginalized communities often must do the most with the least, the following recommendations should be considered:

- Involve community group representatives from vulnerable/marginalized groups in the creation of sustainable solutions as leaders and owners in the process.

- Document scalable projects/solutions and foster such projects in other communities.

- Promote active participation/workshops in learning and documenting traditional farming methodologies, cultural/social behaviors, and human responsibilities/roles by First Nations and Indigenous peoples, especially those that could be scalable to other communities and processes.

- Foster and act on inclusion by design in industry and government design shops and working sessions where decisions are being made and biodiversity, human wisdom, culture, and intergenerational stewardship is an imperative.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. Bendell, Jem, Neil Sutherland, and Richard Little. "Beyond Unsustainable Leadership: Critical Social Theory for Sustainable Leadership." *Sustainability Accounting, Management and Policy Journal* 8, no. 4 (Sept. 2017).

2. Ezeanya, Chika. "Research, Innovation, and Indigenous Knowledge in Sub-Saharan Africa: In Search of a Nexus." In *Economic Integration, Currency Union, and Sustainable Growth in East Africa* (Advances in

ieeesa.io/PP2030   33

African Economic, Social and Political Development). Edited by Almas Heshmati. Switzerland: Springer International, 2016.

3. Ezeanya, Chika, and Abel Kennedy. "Integrating Clean Energy Use in National Poverty Alleviation Strategies: Opportunities and Challenges in Rwanda's Girinka Programme." Chap. 23 in *The Political Economy of Clean Energy Use*. Edited by Douglas Arent et al. Oxford: Oxford Academic, 2017.

4. Fadahunsi, Olayemi. "Climate Change on the Front Line: Why Marginalized Voices Matter in Climate Change Negotiations." *Global Witness* (blog). 9 Aug. 2017.

5. McDonough, William. *Net-Positive: Waging Peace Through Commerce by Design.* 1st ed. McDonough Innovation, 2022.

6. McDonough, William, and Michael Braungart. *Cradle to Cradle: Remaking the Way We Make Things.* 1st ed. North Point Press, 2002.

7. "Meet the Women who Stand Up for Marginalized Groups." UN Office for Disaster Risk Reduction, Regional Office for Asia and Pacific, PreventionWeb. 26 Feb. 2021.

8. Polman, Paul, and Andrew Winston. *Net Positive: How Courageous Companies Thrive by Giving More Than They Take*. 1st ed. Boston, MA: *Harvard Business Review Press*, 2021.

9. Stuart, Elizabeth, and Jessica Woodroffe. "Leaving No-One Behind: Can the Sustainable Development Goals Succeed Where the Millennium Development Goals Lacked?" *Gender & Development* 24, no. 1 (Feb. 2016): 69–81.

10. Taka. "Map Kibera: Empowering Africa's Biggest Slum with Collective Wisdom." Harvard Business School, Digital Innovation and Transformation, MBA Student Perspectives. Last updated 25 Mar. 2018.

11. Taylor-Wesselink, Keisha, and Doireann Wallace. "Draft System of Preconditions for Successful Arts, Humanities and Social Sciences Integration." *SHAPE-ID: Shaping Interdisciplinary Practices in Europe* (July 2021).

12. UN Policy Brief 8. *Community-Based Learning for Sustainable Development*. UIL/2017/PI/H/6. UNESCO Institute for Lifelong Learning. 2017.

13. Williams, Logan D. A. *Eradicating Blindness, Global Health Innovation from South Asia*. Singapore: Palgrave Macmillan Singapore, 2019.

Issue: Ignoring past sustainable technologies, design (architectural, building, agriculture, etc.), and systems is not sustainable

Background

A bias exists toward "modern" or "emerging" technology as the key driver to ecological sustainability when, in fact, various traditional practices could produce as much nourished land, water, or air regeneration as any modern technology.

Emerging technologies can positively and negatively impact the environment. For example, while they can be used to monitor water levels or air quality in a disaster zone and improve city mobility by using optimization and sensors, simultaneously the manufacturing processes involved in their components, testing, shipping, and so on, and the energy needed to power these sensors and systems, can also greatly impact the environment in a negative way. Hence, the use of emerging technologies should be considered carefully before being applied to mitigate environmental issues. There is no guarantee they will work as expected or surpass well-established natural approaches.

In addition, any potential benefits will be diminished when the environmental requirements associated with emerging technologies are taken into account. This trade-off about the use of emerging technologies and their impact on the environment should be analyzed to determine whether the pros are higher than the cons.

Yet, as far as the earth's millions of years of evolution go, there is no better "machine" to clean air, produce oxygen, reduce global warming, and provide soil/land management than a healthy forest and/or natural reservoirs, including oceans. In our forests and oceans, there is no battery storage, solar panels, or wastewater treatment plants, except what nature engineered or created since time began.

Lasting change will only be possible through the collective actions of many in the industrial, commercial, and legislative fields, so support from multiple stakeholders will be needed where recognition and utilization of traditional practices can be considered in partnership with emerging technologies. Thus, supply chains will need to be evaluated to identify potential opportunities to involve traditional farming methods, sustainable processes, and systematic change. Transparency and accountability while avoiding a bias toward new or emerging technology in isolation will allow for more pragmatically innovative solutions to be used for a positive effect.

Recommendations

Innovation in manufacturing, agriculture, built environments, and energy and water production and management, as well as in other product production technologies, needs to be evaluated based on traditional and Indigenous sustainable applications to identify how these processes performed and improved through centuries of evolution:

- Consider evaluation of applications in light of equity for all people in a community, region, or country, including where the rights of the Indigenous or marginalized residents and planetary ecosystems are prioritized above exponential growth. Having these insights should help identify the applicability of sustainable technologies. Traditional practices related to land, water, and air regeneration are often ignored in lieu of favoring modern or emerging technology concepts in current times.

- Identify, document, and promote traditional methodologies, that is, experiences from Indigenous communities in various regions of the world.

- Innovate further to meet the challenges of improving transparency and traceability. Blockchain and vessel monitoring can help, but adoption takes time and further innovation is necessary.

- Encourage use of local/regional sustainable produce and supplies. Pandemics, weather-related events, and political/social unrest can create supply/demand volatility and interrupt supply chains.

- Consider biomimicry and ancient and nature-based solutions in the design process for all things.

- Consider circularity and intergenerational stewardship concepts in the process, product, technology, and organizational model, targeting operating model and culture designs.

Technological Insights and Recommendations
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Further resources
When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. Foley, Jonathan. "Occam's Razor for the Planet," GlobalEcoGuy.org, 5 Mar. 2021.

2. McDonough, William. *Net-Positive: Waging Peace Through Commerce by Design.* 1st ed. McDonough Innovation, 2022.

3. McDonough, William, and Michael Braungart. *Cradle to Cradle: Remaking the Way We Make Things.* 1st ed. North Point Press, 2002.

4. Polman, Paul, and Andrew Winston. *Net Positive: How Courageous Companies Thrive by Giving More Than They Take*. 1st ed. Boston, MA: *Harvard Business Review Press*, 2021.

5. Walmart. "Regeneration of Natural Resources: Forests, Land, Oceans." Environmental, Social & Governance Reporting. Last updated 20 Dec. 2022.

6. Walmart Sustainability Hub. "THESIS index ."

Issue: Lack of transparent tracking of human rights with ethically based trackable measurability and accountability

Background

Many multinational corporations/companies (MNCs) and NGOs/government organizations every year put tremendous amounts of effort and investments in trying to address global or regional sustainability issues through impact-driven initiatives, especially in rural and underdeveloped areas. However, due to a lack of evidence-based measurability and accountability information that can be readily shared with all stakeholders, the public only gets a glimpse of what's taken place in an organization's deeply embedded annual corporate social responsibility (CSR) reports or anecdotal stories on social media.

After being unearthed, pearls of human wisdom and exemplary sustainable practices are not sufficiently disseminated on a broad scale to inspire more efficient resource distribution and inclusive participation from all sectors of society. As there are vast amounts of available empirical data and inputs from both the past and ongoing sustainable development goals (SDGs) and environmental, social, and corporate governance (ESG) efforts, technologies such as artificial intelligence (AI) and blockchain should be able to help unleash waves of aspired and inspired ideas and actions. Specifically, blockchain technologies such as distributed autonomous organizations (DAOs), non-fungible tokens (NFTs), and "smart contracts'' can radically reduce the supply chain waste, delay, and obscurity of transactions by democratizing decision-making.

Recommendations

Ubuntu philosophy needs to be considered when mapping connectivity to show links between actions and impacts. Creating a framework unifying Internet of Things (IoT), AI, and blockchain technology across all countries/regions would help put an end to issues of data availability. Humans can't effectively reduce what can't be measured, hence, the need for real-time data for us to monitor our progress together as a planet:

- Promote and educate NGOs/GOs and MNCs to use this AI data-driven platform to guide and monitor their SDGs/ESG efforts and impacts.

- Use this open platform to track and monitor issues associated with ESG and SDG implementations and give Indigenous or marginalized communities a better chance of letting their voices be heard and getting the best help from other stakeholders.

- Consider people-centered Internet design principles for Internet, technology, data, process, organization, security, privacy, and network design.

Technological Insights and Recommendations

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Further resources

When involving Indigenous communities, it is recommended to consider and prioritize the rights of Indigenous peoples such as the idea of Free, Prior, and Informed Consent.

1. Lane, Anne, and Bree Devin. "Operationalizing Stakeholder Engagement in CSR: A Process Approach." *Corporate Social Responsibility and Environmental Management* 25, no. 3 (2017): 267–280.
2. Nasdaq. "Nasdaq OneReport ESG Reporting." Corporate ESG Solutions.

3. Participatory Methods (website).

4. People-Centered Internet (website).

5. Project Drawdown. "Table of Solutions."

Committee Members

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