

Strong Sustainability by Design

**PRIORITIZING ECOSYSTEM AND HUMAN FLOURISHING
WITH TECHNOLOGY-BASED SOLUTIONS**

ACRONYMS



Strong Sustainability by Design

This Compendium has been created by committees of the IEEE Planet Positive 2030 Initiative supported by the IEEE Standards Association (IEEE SA). The IEEE 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 seventy members of this community from about thirty countries have contributed directly to this Compendium and have worked to identify and find consensus on timely issues.

The Compendium's purpose is to identify specific issues and 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 GHG emissions by 2030.
- Significantly increase regeneration and resilience of the Earth's ecosystems.
- Be well on the path to achieving net zero GHG emissions by 2050 and negative GHG emissions beyond 2050.
- Continue to widely deploy appropriate 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 Compendium:

- Provides a scenario-based challenge (how to achieve "Planet Positivity by 2030") as a tool to inspire readers to get engaged.
- Advances a public discussion about how to build from a "Net Zero" mentality to a "Net or Planet Positive" ("do more good," that is, doing "more" than "don't harm") societal mandate for all technology and policy.
- Continues to build a diverse and inclusive community for the IEEE Planet Positive 2030 Initiative, prioritizing the voices of indigenous and marginalized members whose insights are acutely needed to help make technology and other solutions more valuable for all. Of keen interest is how to encourage more in-depth participatory design in these processes.
- Inspires the creation of technical solutions that can be developed into technical recommendations (for example IEEE SA recommended practice for addressing sustainability, environmental stewardship and climate change challenges in professional practice, [IEEE P7800™](#)) and associated certification programs.
- Facilitates the emergence of policies and recommendations that could potentially be intraoperative between different jurisdictions (e.g., countries).

By inviting the general public to read and utilize *Strong Sustainability by Design*, the IEEE Planet Positive 2030 community provides the opportunity to bring multiple voices from the related scientific and engineering communities together 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. You are invited to Join related IEEE activities, such as standards development and initiatives across the organization.

- For further information, learn more at the [IEEE Planet Positive 2030 Initiative website](#)
- Get in touch at: PlanetPositive2030@ieee.org to get connected to and engaged with the IEEE Planet Positive 2030 community.
- Please, [subscribe to the IEEE Planet Positive 2030 newsletter here](#).

If you're a journalist and would like to know more about the IEEE 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 the IEEE Planet Positive 2030 community respectfully recognizes 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 Compendium, and it is hoped that the inclusive, consensus-building process around its design will contribute unique value to technologists and society as a whole.

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

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A Note Regarding Recommendations in This Document

Strong Sustainability by Design was created in two versions ("draft" and this current edition) that were iterated over the course of two years. The IEEE Planet Positive 2030 Initiative follows a specific consensus building process where members contributing content identify specific potential issues and proposed recommendations.

Membership

IEEE Planet Positive 2030, 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 four hundred experts involved, and remains eager for new voices and perspectives to join in this work.

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STRONG SUSTAINABILITY BY DESIGN: PRIORITIZING ECOSYSTEM AND HUMAN FLOURISHING WITH TECHNOLOGY-BASED SOLUTIONS

Acronyms

ABCD	asset-based community development
AGI	artificial general Intelligence
AHAM	Association of Home Appliance Manufacturers
AI	artificial intelligence
AIS	artificial intelligence systems
ANSI	American National Standards Institute
API	application programming interface
AR	augmented reality
PCP	Asian Citrus Psyllid
bn	billion
B-Corp	B Corporation
BSAT	Basic Sustainability Assessment Tool
CARB	California Air Resources Board
CDC	Centers for Disease Control and Prevention
CDM	clean development mechanism
CICS	caring, inclusive, circular, sustainable
CMRA	Climate Mapping for Resilience and Adaptation (U.S. dashboard application)
CO ₂	carbon dioxide
COP	Conference of the Parties

COP15	Conference of the Parties 15
COP28	Conference of the Parties 28
CSR	corporate social responsibility
D4S	digitalization for sustainability
DAO	decentralized autonomous organizations
DLT	distributed ledger technology
DNA	deoxyribonucleic acid
DPP	digital product passport (European Union)
EPA	Environmental Protection Agency (United States)
ESG	environmental, social, and governance
ESPR	ecodesign for sustainable products regulation (Europe)
EQUIP	Environmental Quality Incentives Program
EU	European Union
EU-28	The member states of the European Union (EU): Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, and including the United Kingdom
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration (United States)
FSC	The Forest Stewardship Council
G20	Group of 20
GBF	Global Biodiversity Framework (Kunming-Montreal)
GDP	gross domestic product
GDPR	general data protection regulation
GHG	greenhouse gas
GHGe	greenhouse gas emissions
GLOSS	Global Sea Level Observing System
GMP	good manufacturing practice
GMSLR	global mean sea-level rise
GNH	gross national happiness
GO	governmental organization
GPI	genuine progress indicator
GS	gold standard
GRI	Global Reporting Initiative






GWP	global warming potential
HDI	Human Development Index
HLEG	high-level expert group
IAASB	International Auditing and Assurance Standards Board
ICT	information and communications technology
IEA	International Energy Agency
IESBA	International Ethics Standards Board for Accountants
IFAC	International Federation of Accountants
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IMO	International Maritime Organization
IoT	Internet of Things
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change (United Nations body for assessing the science related to climate change)
ISFL	Initiative for Sustainable Forest Landscapes (BioCarbon Fund)
ISSB	International Sustainability Standards Board
IUCN	International Union for Conservation of Nature
IUU	illegal, unregulated, and unreported (fisheries)
KPI	key performance indicator
L&D	learning and development (professional)
LIC	lower-income countries
LLII	label, license, identity, interoperability
MAAS	mobility as a service (in Europe)
MARPOL	Prevention of Pollution from Ships
MCA	marine conservation areas
MNC	multinational corporation/company
ML	machine learning
MIT	Massachusetts Institute of Technology
MOD	Mobility on Demand (in the United States)
MPA	marine protected areas
MRV	measurement, reporting, and verification (of GHG mitigation)
MtCO ₂	metric tons of carbon dioxide
NASA	National Aeronautics and Space Administration

NBS	nature-based solutions
NDC	nationally determined contributions
NEB	New European Bauhaus
NGO	non-governmental organization
NFT	non-fungible token
NLP	natural language processing
NLEA	Nutrition Labeling and Education Act of 1991 (United States)
NRCS	National Resource Conservation Stewardship
NOAA	National Oceanic and Atmospheric Administration
OECD	Organisation for Economic Co-operation and Development
P&L	profit and loss (financial)
PETA	People for the Ethical Treatment of Animals
PR	public relations
QA	quality assurance
R&D	research and development
REDD and REDD+	reducing emissions from deforestation and forest degradation in developing countries The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks.
SASB	Sustainability Accounting Standards Board
SDG	Sustainable Development Goal (United Nations)
SNAP	Soil Nutrient Application Planner (SNAP PLUS program)
SOD	Sudden Oak Death
STeAM	STEM + Arts and Culture
STEM	science, technology, engineering, and mathematics
STPP	sodium tripolyphosphate
tCO ₂ e	metric tons of carbon dioxide equivalent emissions
TD	transdisciplinary
TJD	The Jena Declaration
TRL	technology readiness level (TLR)
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDESA	DESA-EN United Nations United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme

UN SDG	United Nations Sustainable Development Goal
USDA	U.S. Department of Agriculture USDA
U.S. SEC	United States Securities and Exchange Commission
VCM	voluntary carbon market
VCS	verified carbon standard
VERRA	Verified Carbon Standard - Verra
VR	virtual reality
WBCSD	World Business Council for Sustainable Development
WEF	Water Environment Foundation
WEF	World Economic Forum
WHO	World Health Organization
WRI	World Resources Institute
WQT	water quality trading
XR	extended reality

RAISING THE WORLD'S STANDARDS FOR SUSTAINABLE STEWARDSHIP

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