EIWC

Entrepreneurship and Innovation for World Challenges
22-23

WHY?

Do we agree that, as IT engineers, we must know the economic, social and environmental impacts of our IT projects?

EWOC

Entrepreneurship for the World Challenges
22-23

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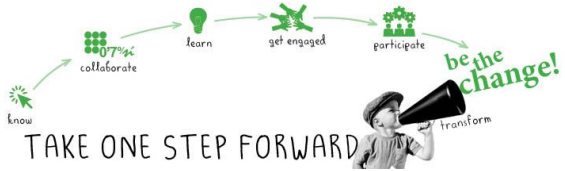
telecom BCN

FIB

ISST INSTITUTE FOR Sustainability Science AND TECHNOLOGY

AUCOOP



- http://aucoop.upc.edu
- https://futur.upc.edu/EvaMariaVidalLopez
- http://ewoc-matt.blogspot.com/

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AUCOOP

- http://aucoop.upc.edu
- http://ewoc-matt.blogspot.com/

This course topics:

- Entrepreneurship
- World challenges
- ICT tools

230732 – EIWC Learning Objectives

EIWC Learning Objectives

- Be able to properly use techniques of innovation, design, management, administration, financing, leadership and **social and environmental responsibility in electronic and ICT projects**.
- Being able to propose, design and implement ICT projects that contribute to achieving the **sustainable development goals proposed by the United Nations**.

EIWC Content

The purpose of engineering. UN Sustainable Development Goals.	The innovation process: Design-Thinking, Lean Startup, Agile Development.	Identification of opportunities and generation of innovative user-oriented ideas with potential social impact.	Development of the project business model, the solution ethical analysis and the economic, social and environmental sustainability analysis.
Development of methodologies for the management of projects in the field of Electronic Engineering, including Intellectual property.	Sources of financing for innovative private and public projects, including R&D&I research projects at national and European level.	Development of a project, carried out by student teams, that includes the identification of a need, the generation of an innovative idea, the use of one or more of the EE technologies	

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EWOC Specific Objectives

EWOC Specific Objectives

- Ability to promote ICT projects that contribute to achieving the sustainable development goals proposed by the United Nations.
- Ability to design and implement ICT-based entrepreneurship projects economically viable, socially acceptable and environmentally friendly.

EWOC Syllabus

Global challenges for sustainable development. [C1]	The new role of companies in the 21st century within the framework of the Sustainable Development Goals. [C2]	Ethical dimension: Mission, governance and value chain [C3]	The professional of the engineering before the innovation in the XXI century: Linear economy. Circular economy. Economy of the common good. New paradigms [C4]
The role of the entrepreneur and the intra-entrepreneur in the current company.[C5]	From the idea to the action: market, human team, resources and viability. [C6]	Methodologies and design tools oriented to the user: Design Thinking, Lean Management, Agile method [C7]	

Learning Results Test

https://forms.gle/XvNzs2A1pxLX4rLD6

More about context

What we talk about when we talk about future?

How old are you?
How old are your parents?
How old will you be in 2030?
How old will you be in 2050?

Future Forecast

https://www.mentimeter.com/s/e4e33885c2ada173bd682c03a262c50f/250ce250e6a0

https://www.quantumrun.com/future-timeline/2050
https://www.quantumrun.com/future-timeline/2030

WHY we talk about sustainability and ethics at MEE?

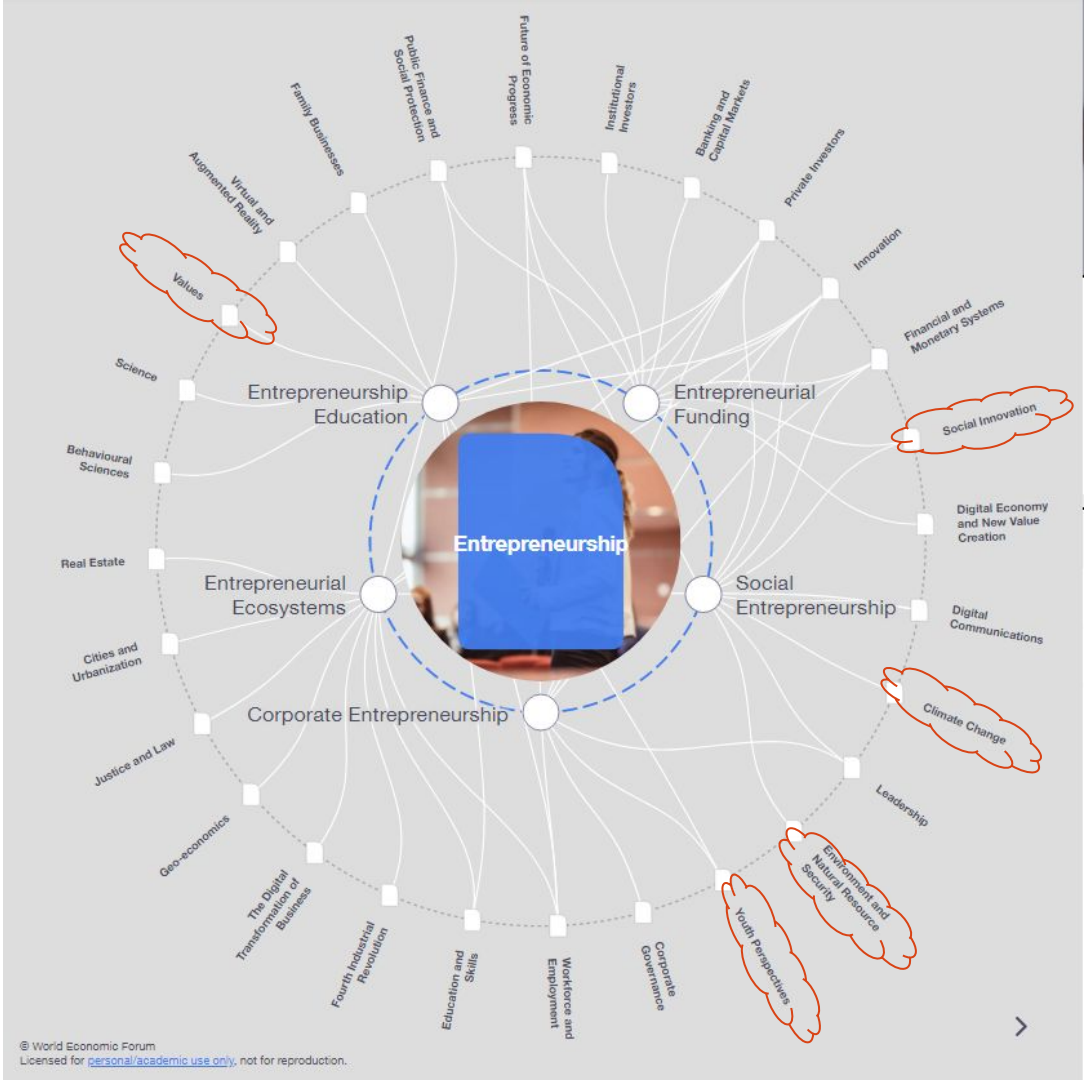
WHY we talk about sustainability and ethics at MAT?

Engineering: “the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to economically use the materials and forces of nature **for the benefit of society**.”
(ABET, the US Accreditation Board for Engineering and Technology)

WHY Entrepreneurship?

Entrepreneurship for the World Challenges

Entrepreneurship is the process of designing, launching and running a new business, which is often initially a small business.



"Entrepreneurship is arguably the most fundamental driver of economic value creation"

World Economic Forum

[Entrepreneurship]

Innovation and Entrepeneurship

Master

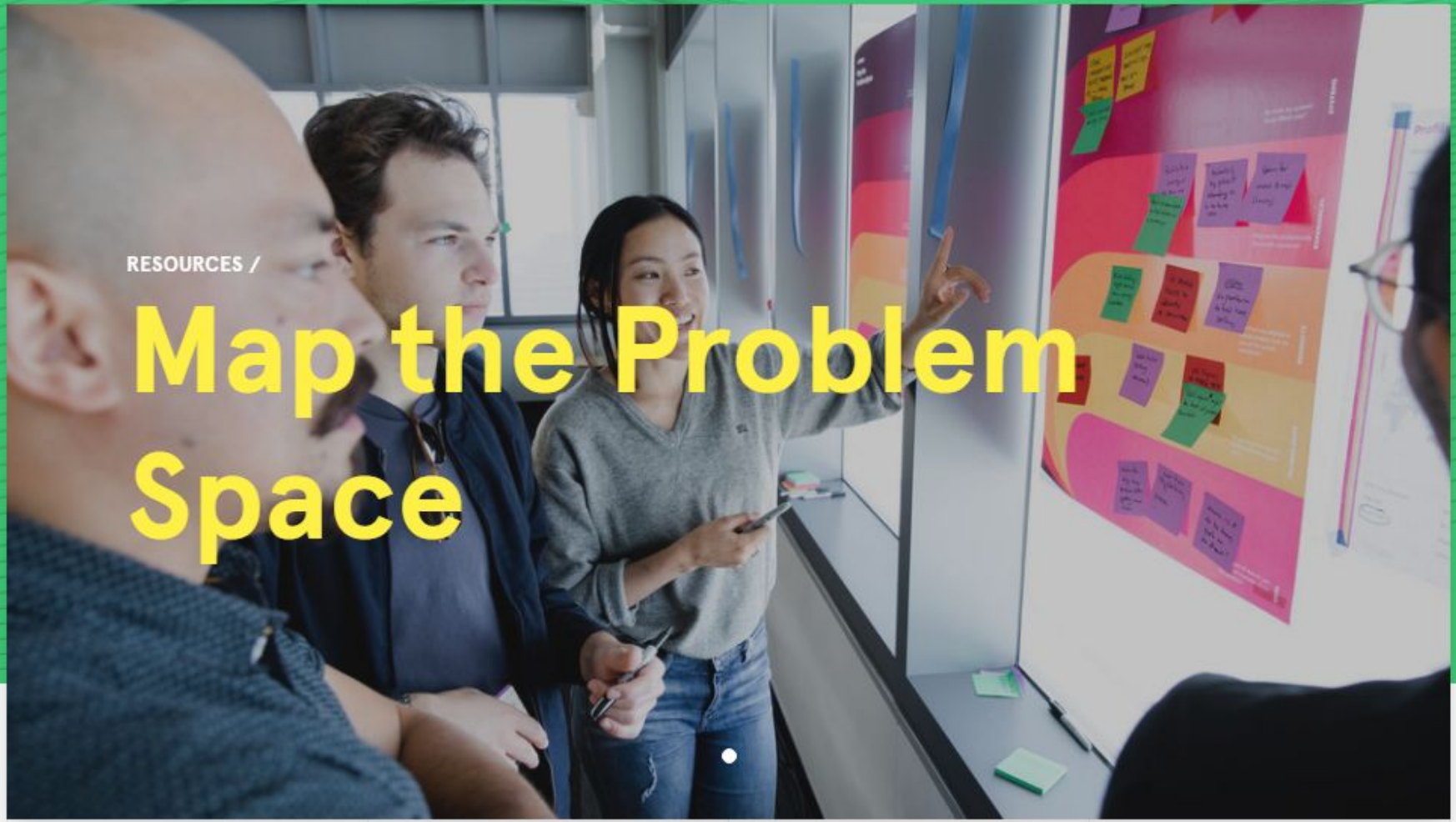
Entrepeneurship and Innovation

Master

How

Design thinking versus "classic" engineering design:

- Classic engineering design usually starts at requirements and specifications developed by others
- Design Thinking methodology provides an alternative way of dealing with ideation and interaction with stakeholders
- The difference is basically in the degree of uncertainty, in how open-ended the problem is



https://dschool.stanford.edu/resources

https://executive-ed.mit.edu/mastering-design-thinking

CERN:

From Universe to Society

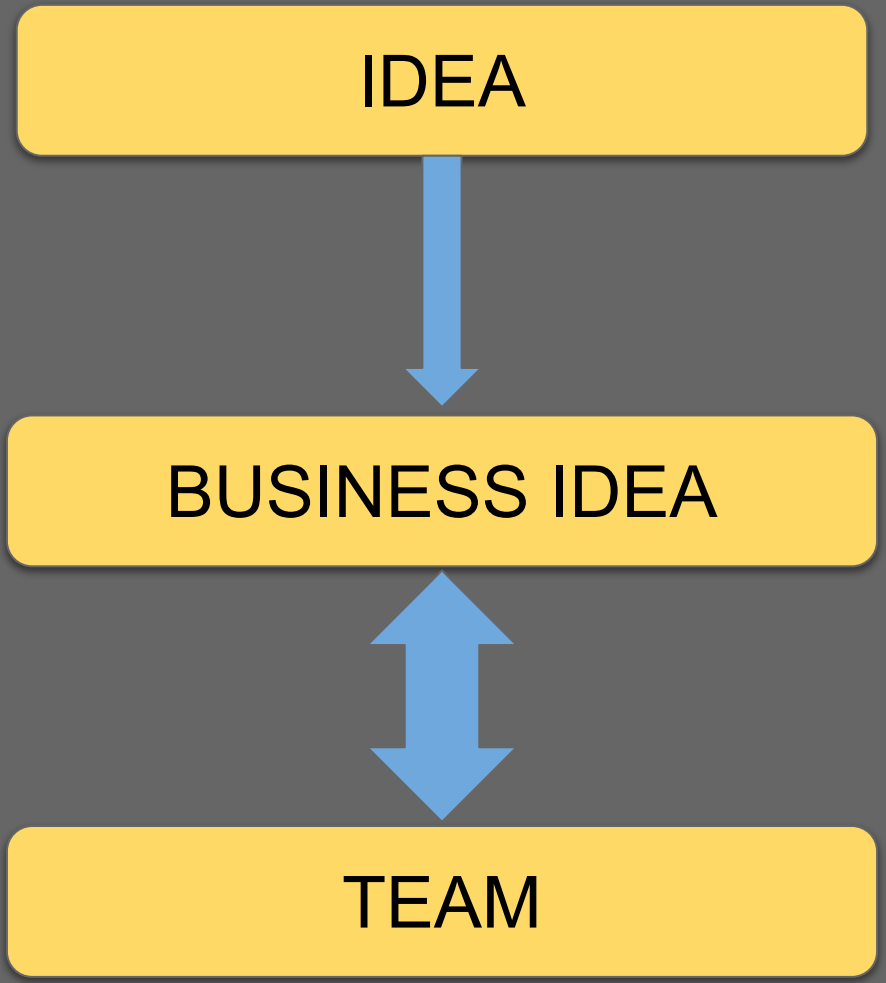
One would not expect to find design thinking in a place where physicists and engineers use some of the world's most powerful particle accelerators and complex scientific instruments to probe the fundamental structure of the universe. Yet at CERN a design thinking initiative was started. Why?


WHERE
WHY
WHEN
?
WHO
HOW
WHAT

Which is the problem? Why is it important?

How are you going to solve it? (Your idea!!!)

How are we going to earn money?
Why is someone going to spend money in our solution?


IDEA
BUSINESS IDEA
TEAM

EWOC:
Entrepreneurship for the World Challenges

EIWC:
Entrepreneurship and Innovation for the World Challenges

WHY for the World Challenges?

Entrepreneurship for the World Challenges

What do you think will be the needs YOU will encounter in your future?

https://miro.com/app/board/uXjVPmv6sPU=/?share_link_id=823476033032

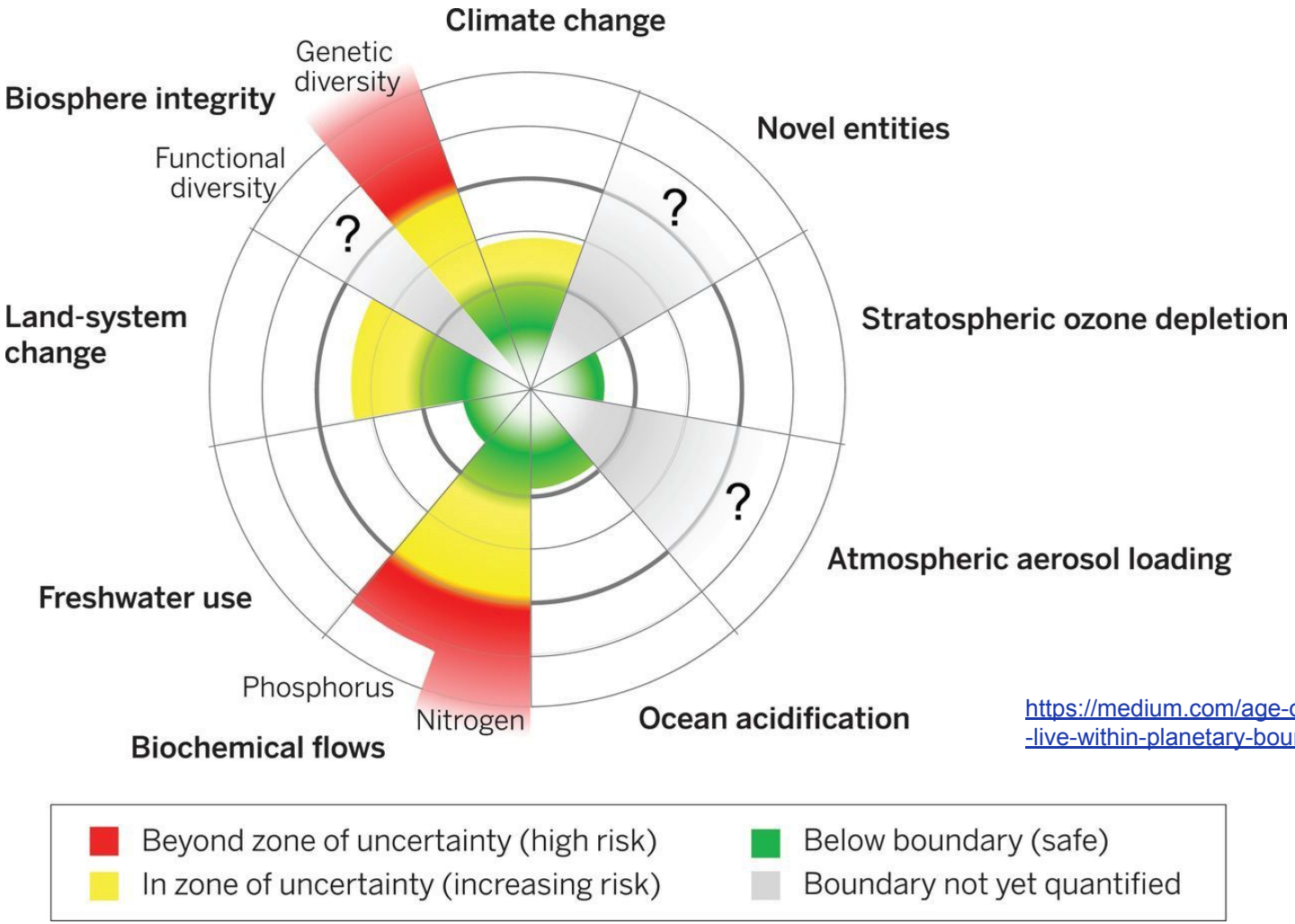

Self-actualization
desire to become the most that one can be
Esteem
respect, self-esteem, status, recognition, strength, freedom
Love and belonging
friendship, intimacy, family, sense of connection
Safety needs
personal security, employment, resources, health, property
Physiological needs
air, water, food, shelter, sleep, clothing, reproduction

What do you think are the World Challenges that we will face in the future?

Planetary limits

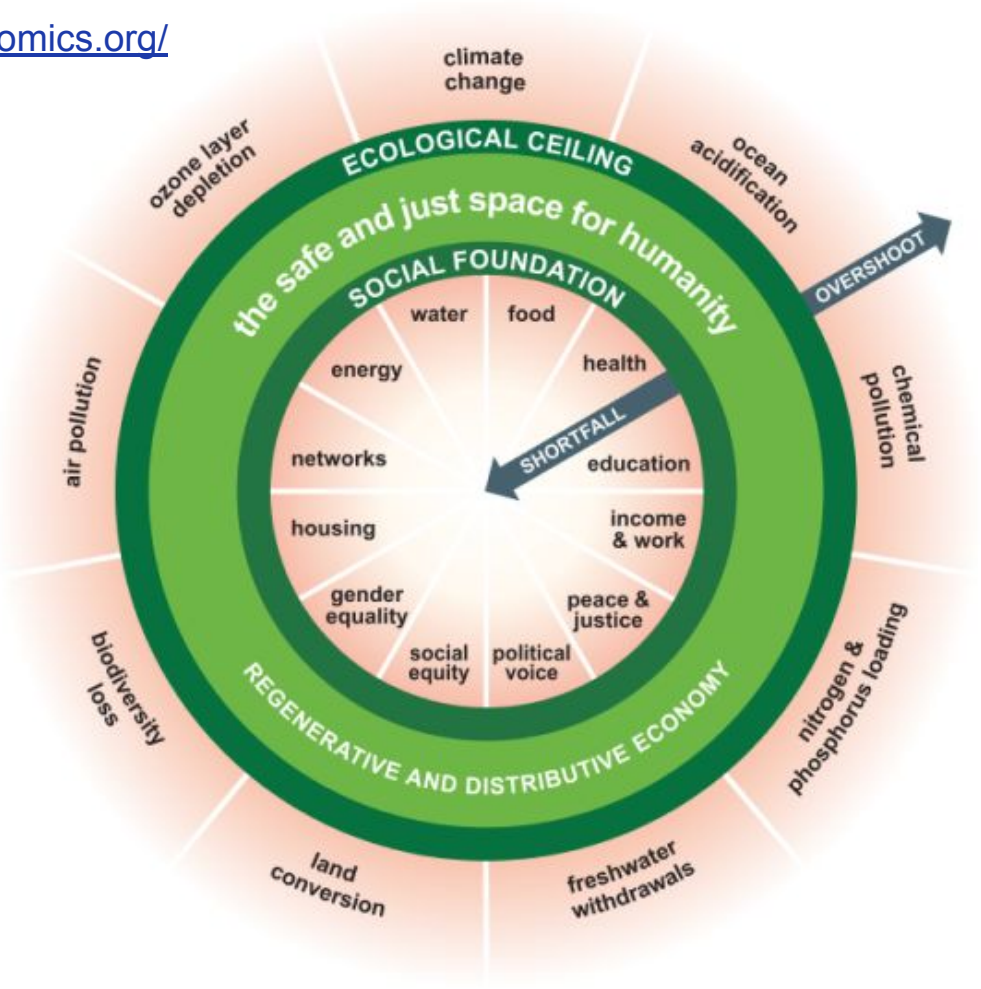
1. Humans are a part of nature, not apart from nature.
2. Non-renewable materials cannot be harvested indefinitely on a finite planet.
3. The ability of Earth's ecosystems to assimilate pollution without consequences is finite.
4. Energy throughput is essential to all human activities, including the economy.
5. Technology is a tool for deploying, not creating energy.
6. Fossil fuel combustion is the primary cause of ongoing global climate change.
7. Exponential growth, whether of physical or economic form, must eventually cease.
8. Today's choices can simultaneously create problems for and deprive resources from future generations.
9. Human behavior is consciously and unconsciously shaped by mental models of culture that, while mutable, impose barriers to change.
10. Apparent success for a few generations during a massive draw-down of finite resources says little about chances for long-term success.

https://planetarylimits.net/foundational-principles/



https://medium.com/age-of-awareness/learning-to-live-within-planetary-boundaries-8f5f9101741d

https://doughnuteconomics.org/



World Challenges ??

Sustainability

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Bruntland Report for the World Commission on Environment and Development (1992)


PEOPLE
Social
PLANET
Environmental
PROFIT
Financial


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE
17 PARTNERSHIPS FOR THE GOALS
THE GLOBAL GOALS
For Sustainable Development


Dignity
• To end poverty and fight inequalities
People
• To ensure healthy lives, knowledge and the inclusion of women and children
Partnership
• To catalyse global solidarity for sustainable development
Sustainable Development Goals
Prosperity
• To grow a strong, inclusive and transformative economy
Justice
• To promote safe and peaceful societies and strong institutions
Planet
• To protect our ecosystems for all societies and our children

Johan Rockström and Pavan Sukhdev present new way of viewing the Sustainable Development Goals and how they are all linked to food..
Stockholm Resilience Centre, Stockholm University

SDGs and Targets

All 232 SDG Indicators: What data is available?

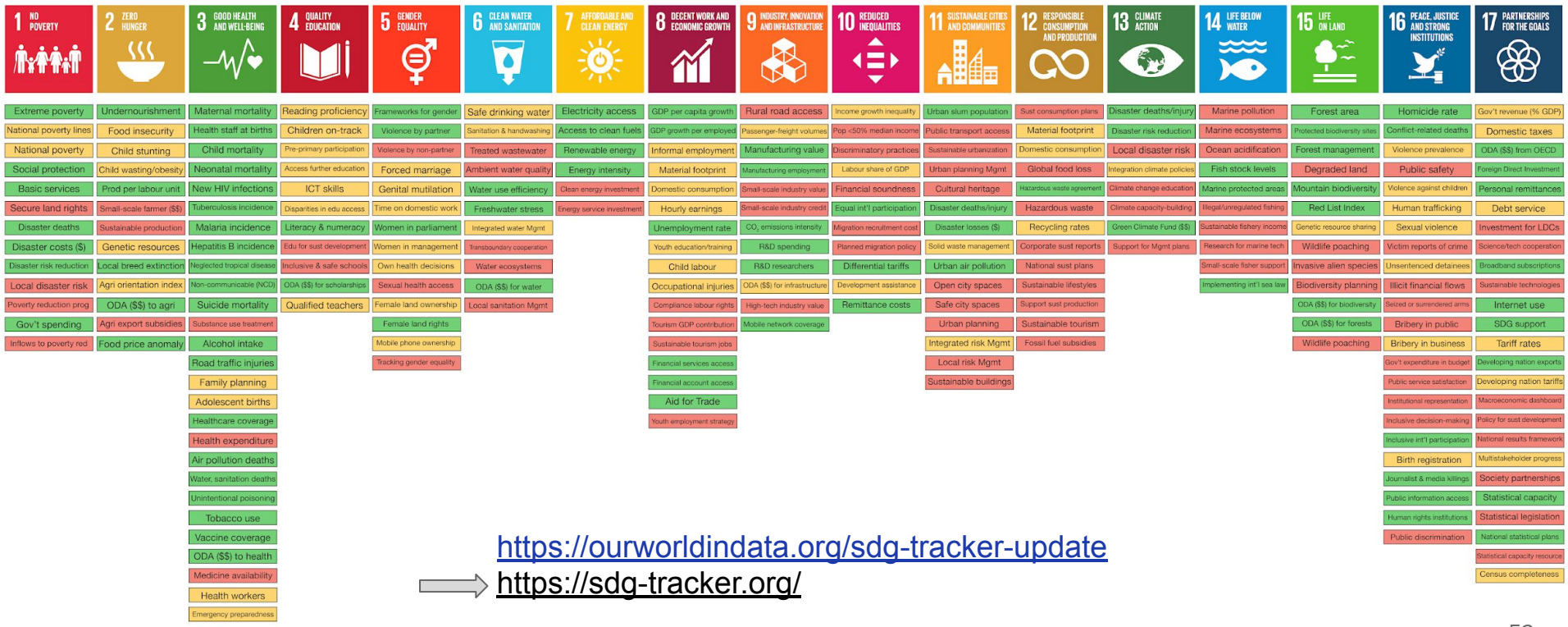
Our World in Data

This visualization shows for which of the 230 *Sustainable Development Goals (SDGs) Indicators* data is available at **SDG-Tracker.org**.

= Indicators for which recent global official metrics are available,
or for which alternative good-quality cross-country source are available (e.g. estimates from independent research institutes).

= Indicators that do have official metrics, but for which available data is very incomplete or outdated.
Yellow boxes also mark Indicators for which there are no official metrics, but for which closely related estimates are available that allow informative but imperfect monitoring.

= Indicators for which – to the best of our knowledge – global monitoring is not currently possible.



https://ourworldindata.org/sdg-tracker-update

⇒ https://sdg-tracker.org/

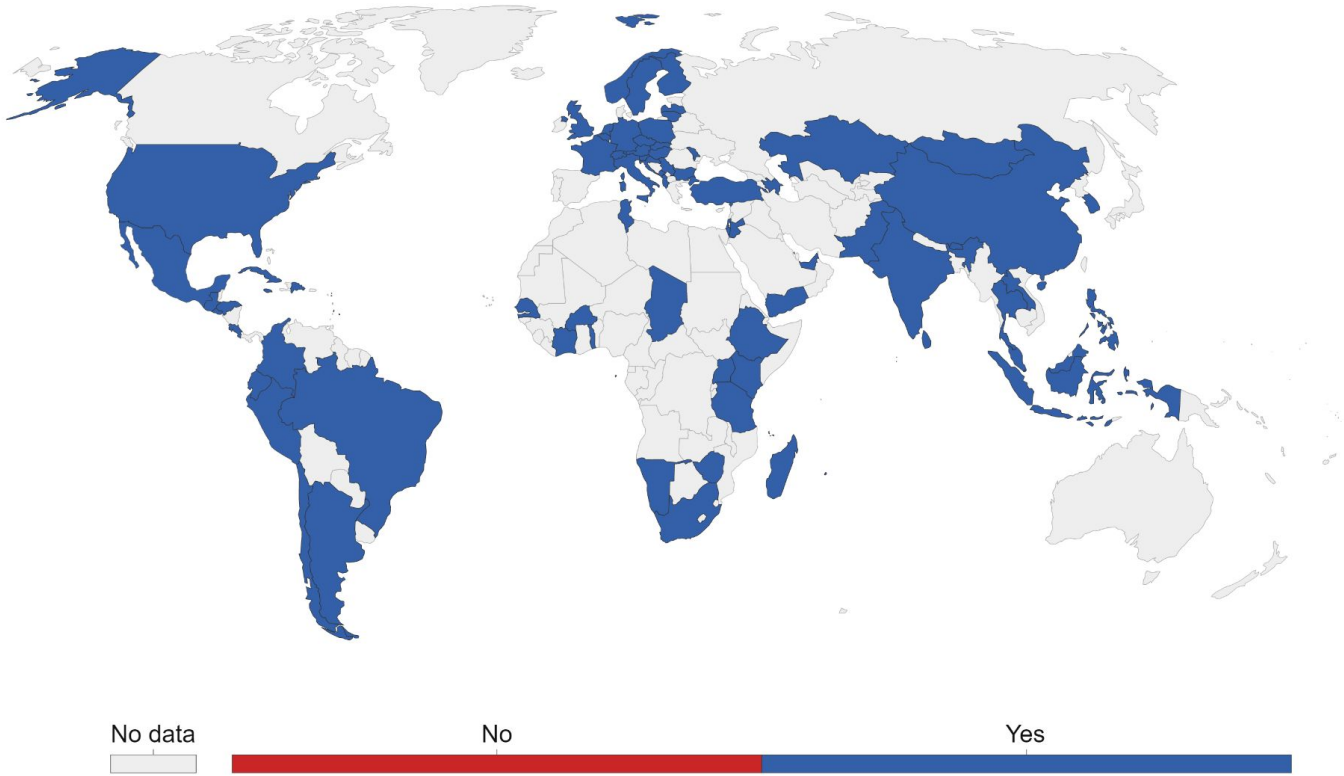
You find all data on SDG-Tracker.org, a sister project of OurWorldinData.org. In case you are aware of relevant data we have not included yet please let us know via SDG-Tracker.org.

How is the world doing on SDG 12?

Does country have sustainable consumption and production national action plan?, 2020

Our World in Data

Countries with or without a sustainable consumption and production (SCP) national action plan or SCP mainstreamed as a priority or target into national policies.



Source: UN Statistics Division

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

TARGET 12·1

IMPLEMENT THE 10-YEAR SUSTAINABLE CONSUMPTION AND PRODUCTION FRAMEWORK

TARGET 12·2

SUSTAINABLE MANAGEMENT AND USE OF NATURAL RESOURCES

TARGET 12·3

HALVE GLOBAL PER CAPITA FOOD WASTE

TARGET 12·8

PROMOTE UNIVERSAL UNDERSTANDING OF SUSTAINABLE LIFESTYLES

TARGET 12·A

SUPPORT DEVELOPING COUNTRIES' SCIENTIFIC AND TECHNOLOGICAL CAPACITY FOR SUSTAINABLE CONSUMPTION AND PRODUCTION

TARGET 12·4

RESPONSIBLE MANAGEMENT OF CHEMICALS AND WASTE

TARGET 12·5

SUBSTANTIALLY REDUCE WASTE GENERATION

TARGET 12·6

ENCOURAGE COMPANIES TO ADOPT SUSTAINABLE PRACTICES AND SUSTAINABILITY REPORTING

TARGET 12·7

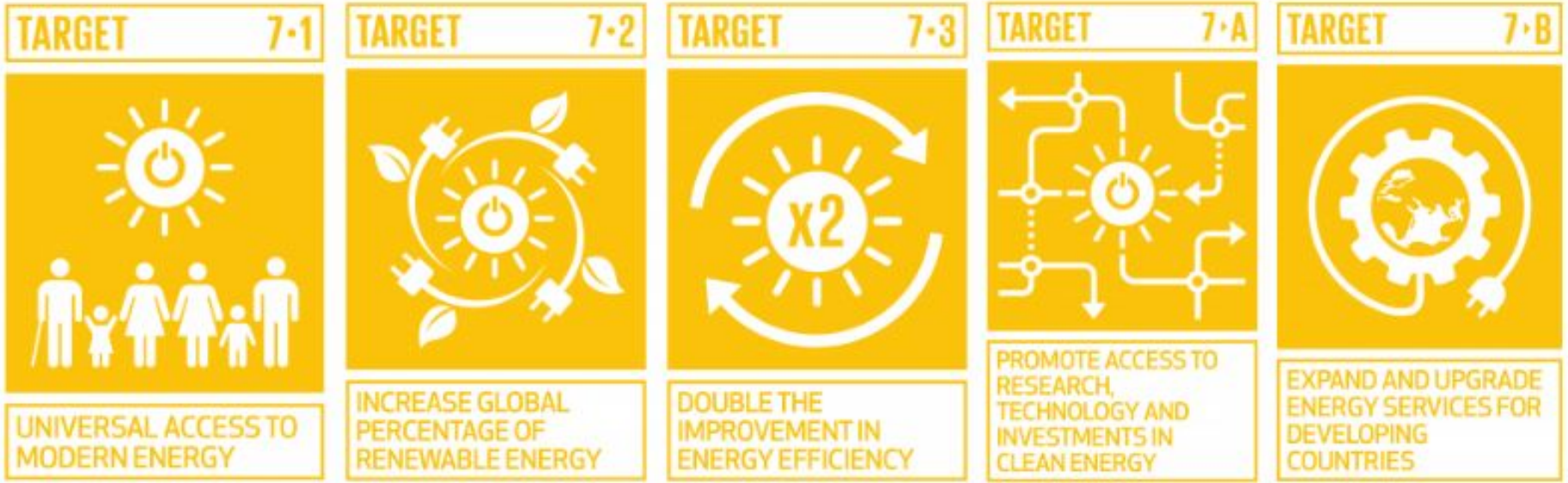
PROMOTE SUSTAINABLE PUBLIC PROCUREMENT PRACTICES

TARGET 12·B

DEVELOP AND IMPLEMENT TOOLS TO MONITOR SUSTAINABLE TOURISM

TARGET 12·C

REMOVE MARKET DISTORTIONS THAT ENCOURAGE WASTEFUL CONSUMPTION



https://opendevelopmentmekong.net/topics/sdg7-affordable-and-clean-energy/

SAFE AND AFFORDABLE HOUSING

AFFORDABLE AND SUSTAINABLE TRANSPORT SYSTEMS

INCLUSIVE AND SUSTAINABLE URBANIZATION

PROTECT THE WORLD'S CULTURAL AND NATURAL HERITAGE

REDUCE THE ADVERSE EFFECTS OF NATURAL DISASTERS

REDUCE THE ENVIRONMENTAL IMPACT OF CITIES

PROVIDE ACCESS TO SAFE AND INCLUSIVE GREEN AND PUBLIC SPACES

STRONG NATIONAL AND REGIONAL DEVELOPMENT PLANNING

IMPLEMENT POLICIES FOR INCLUSION, RESOURCE EFFICIENCY AND DISASTER RISK REDUCTION

SUPPORT LEAST DEVELOPED COUNTRIES IN SUSTAINABLE AND RESILIENT BUILDING

Let's learning by playing:

- https://www.menti.com/h3eixvufuz

Mentimeter about SDG

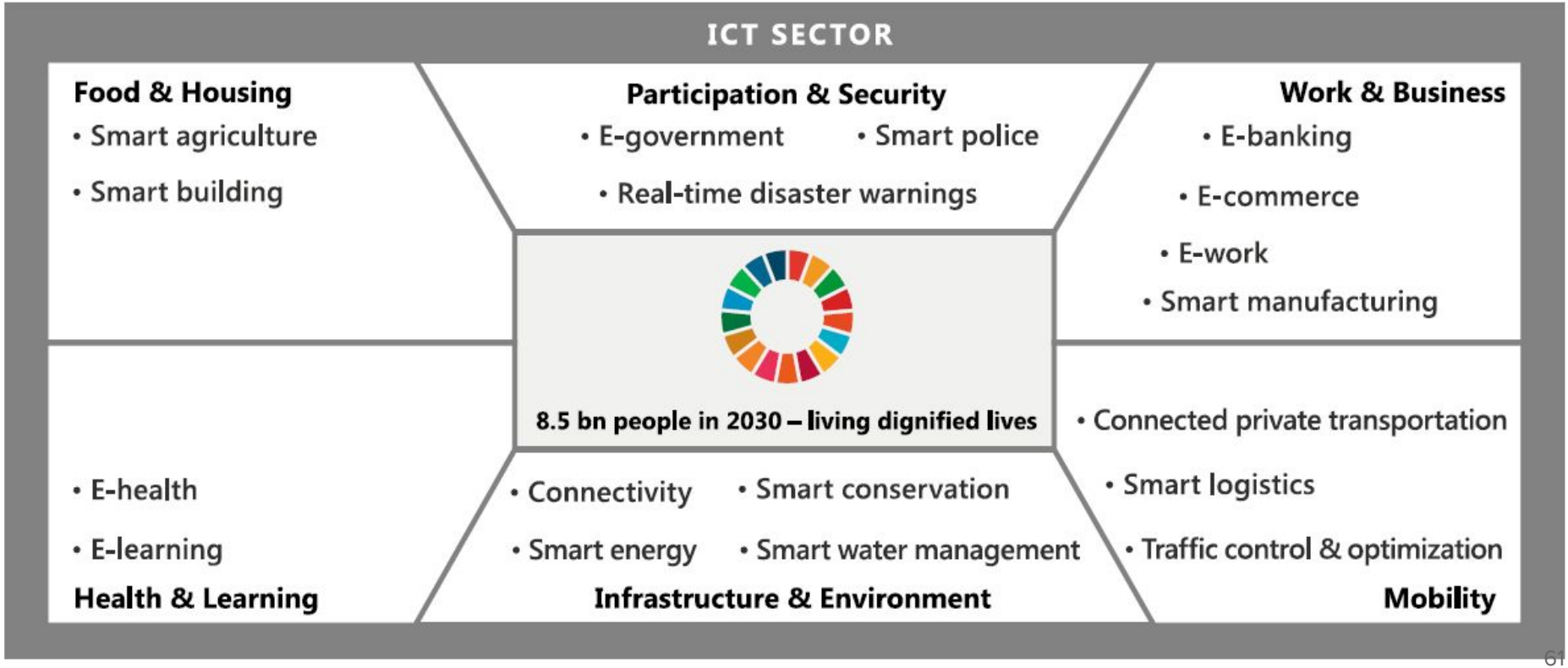
Go to menti.com

SDG and electronics and ICT?

You tell me

Go to MIRO

The $2.1 Trillion Revenue Opportunity for ICT Companies



https://www.environmentalleader.com/2016/06/the-2-1-trillion-revenue-opportunity-for-ict-companies/

Table 1. Sustainable Development Goals, ICTs and gender

1 NO POVERTY 	**TARGET 1.4** By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new **technology** and financial services, including microfinance	
2 ZERO HUNGER 	**TARGET 2.A.** Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, **technology development** and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries	
	TARGET 2.C. Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market **information**, including on food reserves, in order to help limit extreme food price volatility	
4 QUALITY EDUCATION 	**TARGET 4.B** By 2020, substantially expand globally the number of scholarships available to developing countries [...], for enrolment in higher education, including vocational training and **information and communications technology**, technical, engineering and scientific programmes, in developed countries and other developing countries	**INDICATOR 4.4.1.** Proportion of youth and adults with **information and communications technology (ICT) skills**, by type of skill
5 GENDER EQUALITY 	**TARGET 5.B.0** Enhance the use of enabling technology, in particular **information and communications technology**, to promote the empowerment of women	**INDICATOR 5.B.1** Proportion of individuals who own a **mobile telephone**, by sex

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	**TARGET 9.C** Significantly increase access to **information and communications technology** and strive to provide universal and affordable access to the Internet in least developed countries by 2020	**INDICATOR 9.C.1** Proportion of population covered by a mobile network, by **technology**
16 PEACE, JUSTICE AND STRONG INSTITUTIONS	**TARGET 16.10** Ensure public access to **information** and protect fundamental freedoms, in accordance with national legislation and international agreements	**INDICATOR 16.10.2** Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public **access to information**
17 PARTNERSHIPS FOR THE GOALS	**TARGET 17.6** Enhance North-South, South-South and triangular regional and international cooperation on and access to science, **technology** and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	**INDICATOR 17.6.1** Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation **INDICATOR 17.6.2** Fixed **Internet** broadband subscriptions per 100 inhabitants, by speed
	TARGET 17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound **technologies** to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed	**INDICATOR 17.7.1** Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound **technologies**
	TARGET 17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling **technology**, in particular **information and communications technology**	**INDICATOR 17.8.1** Proportion of individuals using the **Internet**

SDG	SDG FOCUS AREAS AND TARGETS* WHICH BENEFIT MOST FROM DIGITAL SOLUTIONS	MOST POWERFUL DIGITAL SOLUTION(S)	DIGITAL'S POSITIVE IMPACT WITH ILLUSTRATIVE DATA POINT
1 NO POVERTY 	• Eradicate extreme poverty (1.1) • Reduce poverty in all its dimensions (1.2) • Ensure equal rights to economic resources and basic services (1.4) • Build resilience of the poor (1.5)	**CONNECTIVITY** for example, fixed and/or mobile access to telephony and internet, includes necessity for a device	» Increases access to opportunities to break free of poverty and improve economic participation **One third fewer people living on less than $1.25 per day from extended internet access[47]**
5 GENDER EQUALITY 	• Eliminate all forms of violence against all women and girls (5.2) • Ensure women's full and effective participation and equal opportunities for leadership (5.5) • Enhance the use of enabling technology, in particular ICT (5.b)	**CONNECTIVITY** for example, fixed and/or mobile access to telephony and internet, includes necessity for a device	» Empowers women to participate in economic activities and thereby improve their status **US$13-$18 billion additional combined annual GDP for 600,000 women in developing countries from an increase in Internet access[48]**

SDG	SDG FOCUS AREAS AND TARGETS* WHICH BENEFIT MOST FROM DIGITAL SOLUTIONS	MOST POWERFUL DIGITAL SOLUTION(S)	DIGITAL'S POSITIVE IMPACT WITH ILLUSTRATIVE DATA POINT
	• End hunger (2.1) • End malnutrition (2.2) • Double agricultural productivity of small-scale farmers (2.3) • Ensure sustainable food production (2.4) • Ensure functioning of food markets (2.c)	**SMART AGRICULTURE** for example, optimized farm management and automated irrigation systems; precision agriculture, incl. M2M / IoT, soil sensors and satellites and integrated real-time weather information; traceability and tracking systems	» Increases agricultural productivity while reducing the need for scarce inputs such as water **Crop yield increase of >900 kg/ha in 2030[19]**
	• Reduce maternal mortality end deaths of children (3.1 and 3.2) • Reduce death from non-communicable diseases, e.g. diabetes (3.4) • Halve deaths and injuries from road accidents (3.6) • Achieve universal health coverage (3.8) • Improve training of health workforce (3.c)	**E-HEALTH** for example, remote diagnostics videoconferencing, electronic data storage, augmented reality, wearables, biosensors, personalized medicine, DNA sequencing, etc.	» Makes health more accessible and affordable, and enables better quality **1.6 billion people with access to e-health services in 2030[20]**

	• Ensure primary and secondary education for all (4.1) • Ensure equal access to vocational and tertiary and education (4.3) • Increase youth's vocational skill levels (4.4) • Achieve literacy and numeracy (4.6) • Increase supply of skilled teachers (4.c)	**E-LEARNING** for example, videoconferencing, advanced data analytics, Massive Open Online Courses (MOOC), open community platforms, augmented reality, gamification, voice recognition software	» Makes education more accessible, affordable and higher quality **450 million e-learning degrees in 2030[21]**
	• Reduce violence and deaths everywhere (16.1) • Develop effective, accountable and transparent institutions (16.6) • Ensure participatory decision-making (16.7) • Provide legal identity for all, including birth registration (16.9)	**E-GOVERNMENT AND SMART POLICE** for example, big data analytics, open government (datasets, public apps using open data), e-identity, online voting, predictive analytics and algorithms for crime forecasting, augmented reality, drones and robotics and neuroscience	» Reduces crime and enables better participation and transparency, strengthening people's democratic rights **In Mozambique, SMS messages allowed citizens to report electoral irregularities and increased voter turnout by 5 percentage points[22]**

SDG	SDG FOCUS AREAS AND TARGETS* WHICH BENEFIT MOST FROM DIGITAL SOLUTIONS	MOST POWERFUL DIGITAL SOLUTION(S)	DIGITAL'S POSITIVE IMPACT WITH ILLUSTRATIVE DATA POINT
6 CLEAN WATER AND SANITATION 	• Achieve universal and equitable access to drinking water (6.1) • Improve water quality (6.3) • Increase water-use efficiency (6.4) • Implement integrated water resources management at all levels (6.5) • By 2020, protect and restore water-related ecosystems (6.6)	**SMART WATER MANAGEMENT** for example, smart pipes, smart levees, smart meters,soil sensors, remote irrigation management systems, rain water harvesting systems, consumption control apps, e-billing	» Improves water use efficiency and helps increasing access to water **Up to 15 per cent water consumption reduction[71]**
7 AFFORDABLE AND CLEAN ENERGY 	• 7.1: Ensure universal access to energy services (7.1) • Increase share of renewable energy in the global energy mix (7.2) • Double the global rate of improvement in energy efficiency (7.3) • Expand infrastructure and upgrade technology for supplying modern and sustainable energy (7.b)	**SMART ENERGY** for example, smart grid, smart appliances, energy storage, predictive analytics, sensors, demand response technology	» Improves energy efficiency and access to more affordable energy and supports to increase share of renewable energies in energy mix **>1.3 billion MWh savings in 2030[72]**

11 SUSTAINABLE CITIES AND COMMUNITIES 	• Provide access to safe, affordable, accessible and sustainable transport systems (11.2) • Reduce adverse per capita environmental impact of cities, incl. air quality and waste management (11.6) • Increase the no. of cities with policies towards, resource efficiency, mitigation and adaptation to climate change, resilience to disasters (11.b)	**SMART CITY MOBILITY** for example, mobile ride sharing, e-mobility, driverless transportation, intermodality, connected infrastructure/IoT **SMART BUILDING** for example, alarm management and automation, big data analytics and energy management, smart metering, IoT/sensors, monitoring, detection and diagnosis technologies	» Reduces resource consumption, improves energy efficiency and reduces air pollution **Around a 5 per cent CO_2e emissions savings in 2030 from smart building and smart city mobility alone[73]**

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

- Achieve sustainable management and efficient use of natural resources (12.2)
- Halve per capita global food waste (12.3)
- Reduce waste generation (12.5)
- Ensure that people have awareness for sustainable development and lifestyles (12.8)

SMART MANUFACTURING
for example, industrial Internet of Things (IoT) and Machine-to-Machine (M2M), 3-D printing, cyber-physical systems (CPS), data analytics & cloud computing, drones & robotics, embedded system production technology

SMART AGRICULTURE
for example, optimized farm management and automated irrigation systems; precision agriculture, incl. M2M / IoT, soil sensors and satellites and integrated real-time weather information, traceability and tracking systems

»
Improves production and consumption patterns, enabling the transformation to the circular economy

20 per cent food waste savings in 2030 from smart agriculture[74]

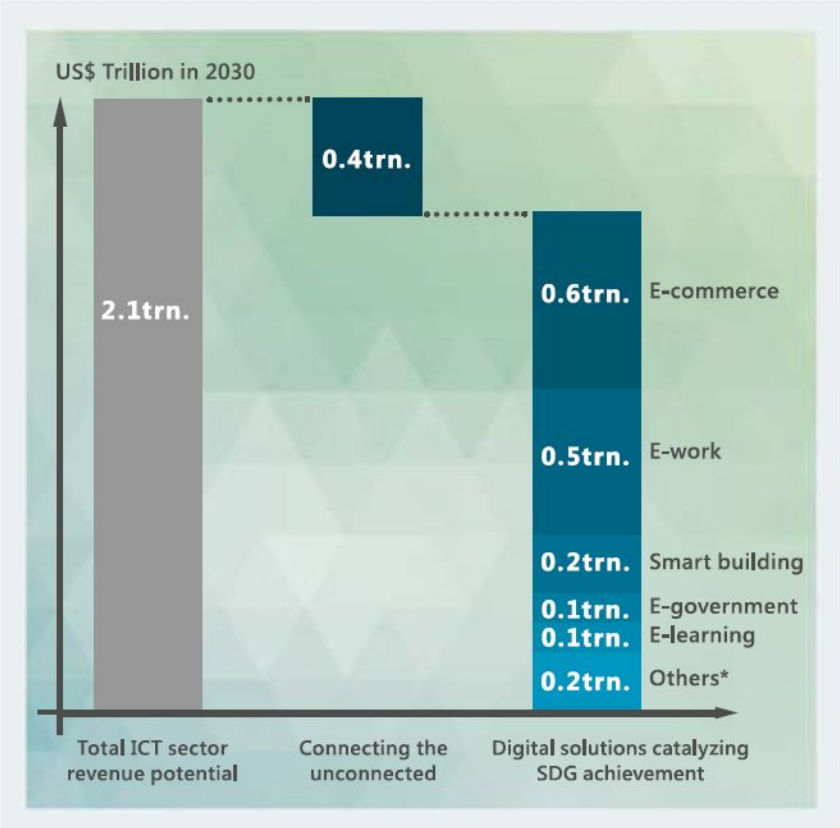
SDG	SDG FOCUS AREAS AND TARGETS* WHICH BENEFIT MOST FROM DIGITAL SOLUTIONS	MOST POWERFUL DIGITAL SOLUTION(S)	DIGITAL'S POSITIVE IMPACT WITH ILLUSTRATIVE DATA POINT
13 CLIMATE ACTION 	• Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters (13.1) • Improve education capacity on climate change management (13.3)	**ALL DIGITAL SOLUTIONS** with sustainability benefits, including smart agriculture, smart building, smart energy, smart manufacturing, smart mobility, etc.	» Enables greenhouse gas emissions reduction and drives market transformation for renewables **Around 20 per cent of global CO_2e emissions can be saved in 2030[75]**
14 LIFE BELOW WATER 	• Reduce marine pollution from land-based activities (14.1) • Minimize and address the impacts of ocean acidification (14.3) • Provide access of small-scale fishers to markets (14.b)	**SMART CONSERVATION** for example, advanced mapping and data analytics, sub-marine, coastal and inland smart sensors, drones, real-time satellite imaging, smart monitoring, real-time weather forecasting	» Improves protection of oceans and water quality **32 per cent of the world's coastal areas could already benefit from smart conservation solutions[76]**

Sustainable development makes good business sense

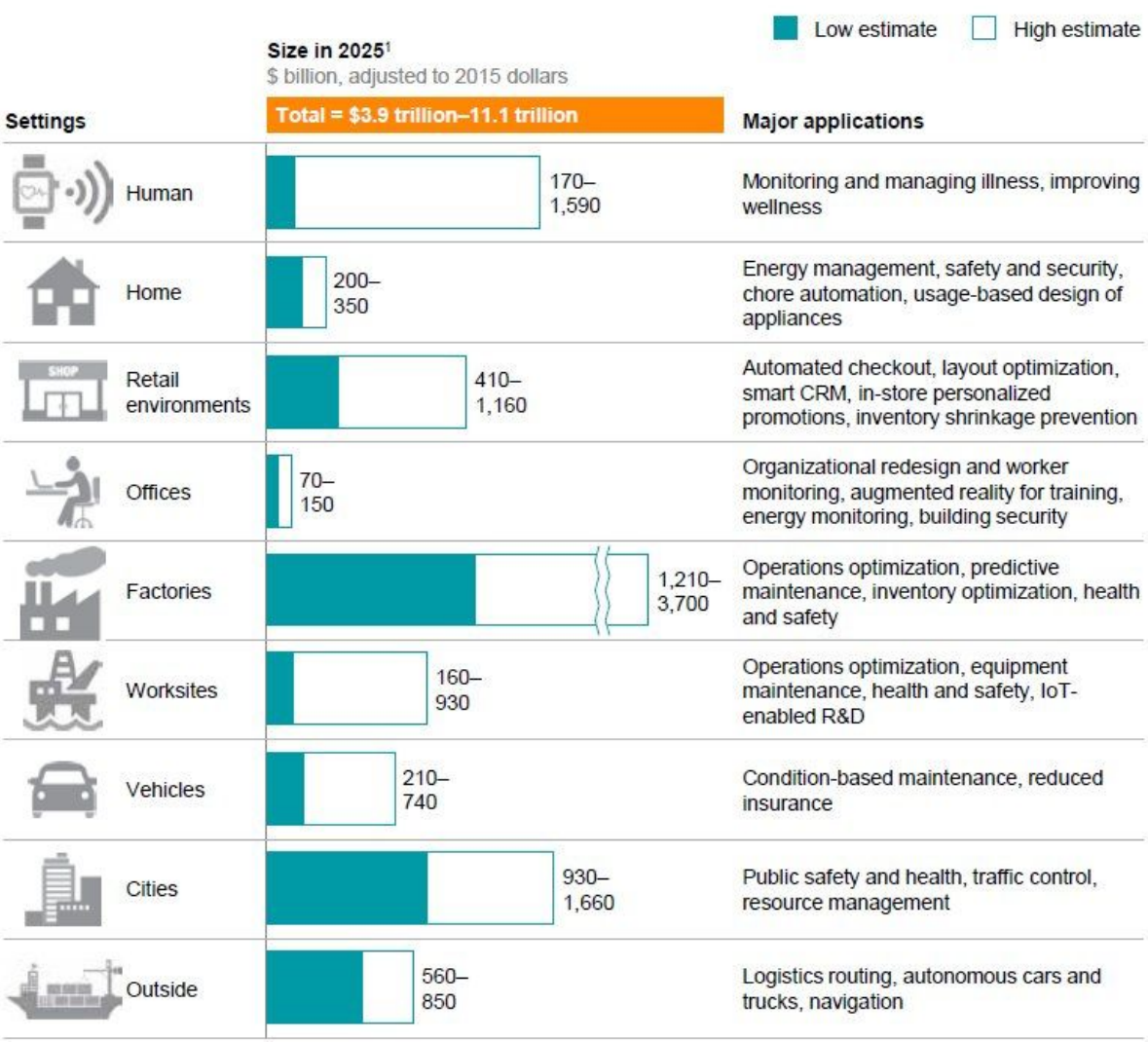
Sustainable development makes good business sense

[Why Sustainable Development Makes Good Business Sense]

EXHIBIT 15: ICT sector revenues from digital solutions that catalyze SDG achivement, per year in 2030



* Others include: Connected private transportation, e-banking, e-government, e-health, real-time disaster warnings, smart agriculture, smart conservation, smart energy, smart logistics, smart manufacturing, smart police, smart water management, traffic control & optimization



http://unsdsn.org/resources/publications/ict-and-sdgs/

Companies and SDGs

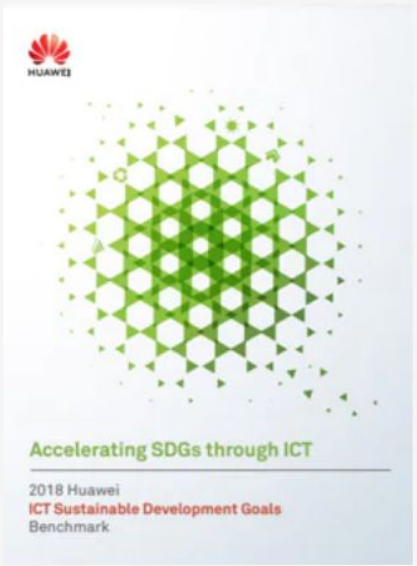
- https://www.ficosa.com/sustainability/
- https://www.lear.com/sustainability
- https://docs.broadcom.com/doc/environment-social-governance-report
- https://circutor.com/en/company/culture-and-values/
- Environment - Apple
- Accelerating SDGs through ICT-Huawei
- Google for Startups Accelerator: Sustainable Development Goals - Home
- Sustainable Development Goals | Microsoft CSR
- Supporting the UN Sustainable Development Goals | Meta

https://www.accio.gencat.cat/ca/sectors/electronica-electricitat/

2020–2021 Huawei Consumer Business Sustainability Progress Report

2011-2020 Huawei Consumer Business Sustainability Progress Report

2019 ICT Sustainable Development Goals Benchmark



2018 ICT Sustainable Development Goals Benchmark

https://www.huawei.com/en/sustainability/sustainability-report

Your product's environmental report card.

Each device is measured by its impact on our carbon footprint and how environmentally friendly — and safe — its materials are.

iPhone | iPad | Apple Watch | Notebooks | Desktops | Displays | HomePod | Apple

iPhone 11 Pro Max
View (PDF)

iPhone 11 Pro
View (PDF)

iPhone 11
View (PDF)

iPhone XR
View (PDF)

iPhone 8
View (PDF)

iPhone 8 Plus
View (PDF)

View previous reports ⊕

https://www.apple.com/environment/

https://bcorporation.net/

A Global Community of Leaders

4,088
Companies

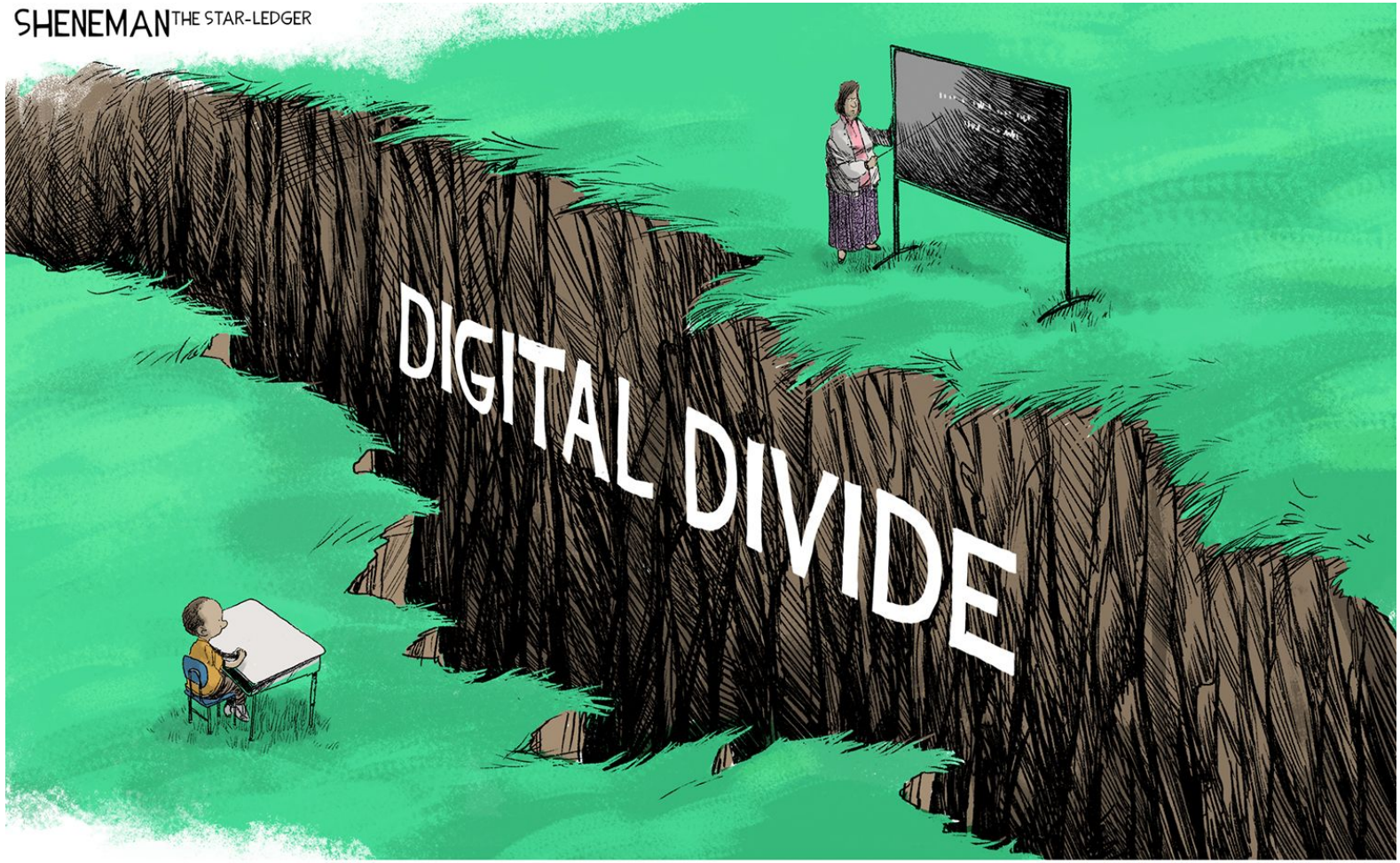
153
Industries

77
Countries

1
Unifying Goal

Certified B Corporations a
purpose and profit. They
their decisions on their workers, customers, suppliers, community, and
the environment. This is a community of leaders, driving a global
movement of people using business as a force for good.

But...



DISTANCE LEARNING

But...

Digital Technologies Are Part of the Climate Change Problem

https://www.ictworks.org/digital-technologies-climate-change-problem/#.XlaquCFKjIU

1. **Technology Redundancy and Unsustainability**
    a. Replacement Rather Than Repair
    b. Software Development Forces Hardware Upgrades
    c. The Growing eWaste Problem
2. **Technology Driving Electricity Demand**
    a. Electricity for Manufacturing Devices
    b. Electricity for Digital Technology Use
    c. Electricity for New Digital Technologies
    d. Electricity for 5G and Internet of Things
3. **Technology's Environment Exploitation**
    a. Need for Rare Minerals
    b. Mining Rare Minerals
4. **Technology's Direct Environmental Impact**
    a. Carbon Impact of Digital Technology
    b. Electrical Demand of New Technology
    c. Expanded Physical Infrastructure
    d. Proliferation of Satellite Constellations

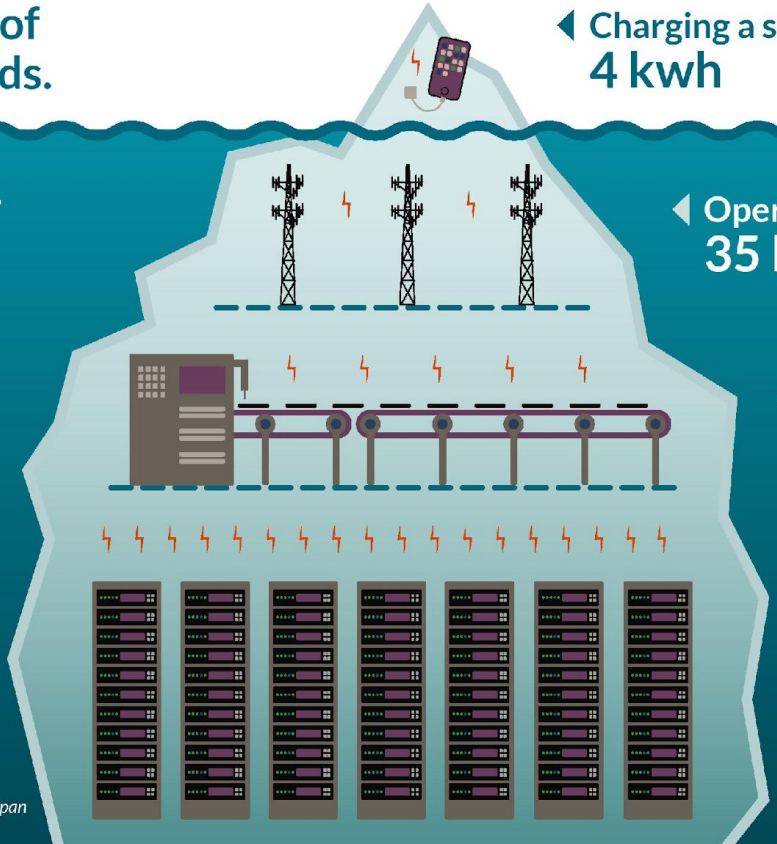
ENERGY FOR GROWTH HUB

PROSPERITY DEMANDS A LOT OF ENERGY

THE INVISIBLE ENERGY OF A SMARTPHONE

Charging is less than 1% of your phone's energy needs.

The other 99% is hidden.



Charging a smartphone
4 kwh

Operating a cell tower
35 kwh

Manufacturing a smartphone
93 kwh

Operating data centers
443 kwh

https://www.energyforgrowth.org/blog/infographic-are-we-learning-the-right-energy-lesson-from-mobile-phones-the-energy-iceberg-says-no/

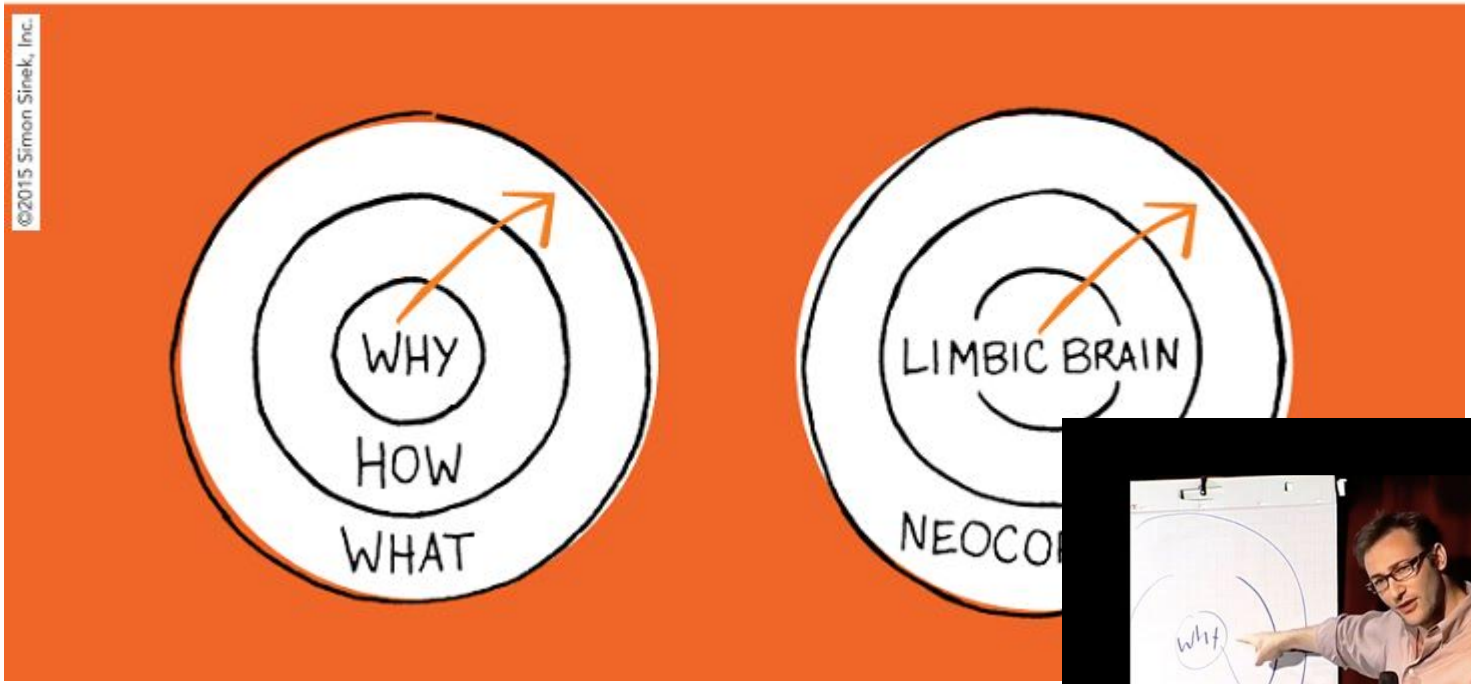
Estimates are 2013 data per iPhone per year, assuming a three-year lifespan
Sources: Fischer, Madrigal, Smil, Lella

Solar energy is Green. Solar panels are not.

https://spectrum.ieee.org/green-tech/solar/solar-energy-isnt-always-as-green-as-you-think

WHY EIWC?

The Golden Circle + Human Brain



https://startwithwhy.com/

Mentimeters about sustainability reporting and impacts of ICT

https://www.menti.com/68d3gbtc2w