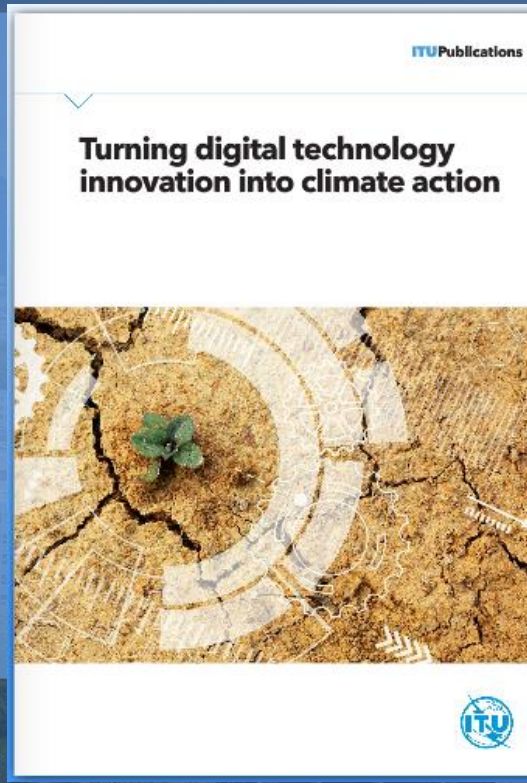
Turning Digital Technology into Climate Action

Phillippa Biggs, Senior Policy Analyst, ITU



Agenda

1. Climate change gaining importance at the UN level
2. What role for ICTs?
3. ICTs for monitoring climate change
4. ICTs and climate change mitigation
5. ITU's role

The UN Inspiring Climate Action...

"The world is facing a grave climate emergency. Climate disruption is happening now, and it is happening to all of us. (…) We are in a battle for our lives. But it is a battle we can win."

UN Secretary-General António Guterres

CLIMATE ACTION SUMMIT 2019

A RACE WE CAN WIN

SDGs 7, 11, 12, 13, 14 and 15

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable

SDGs 7, 11, 12, 13, 14 and 15

SDG 12: Ensure sustainable consumption and production patterns

SDG 13: Take urgent action to combat climate change and its impacts

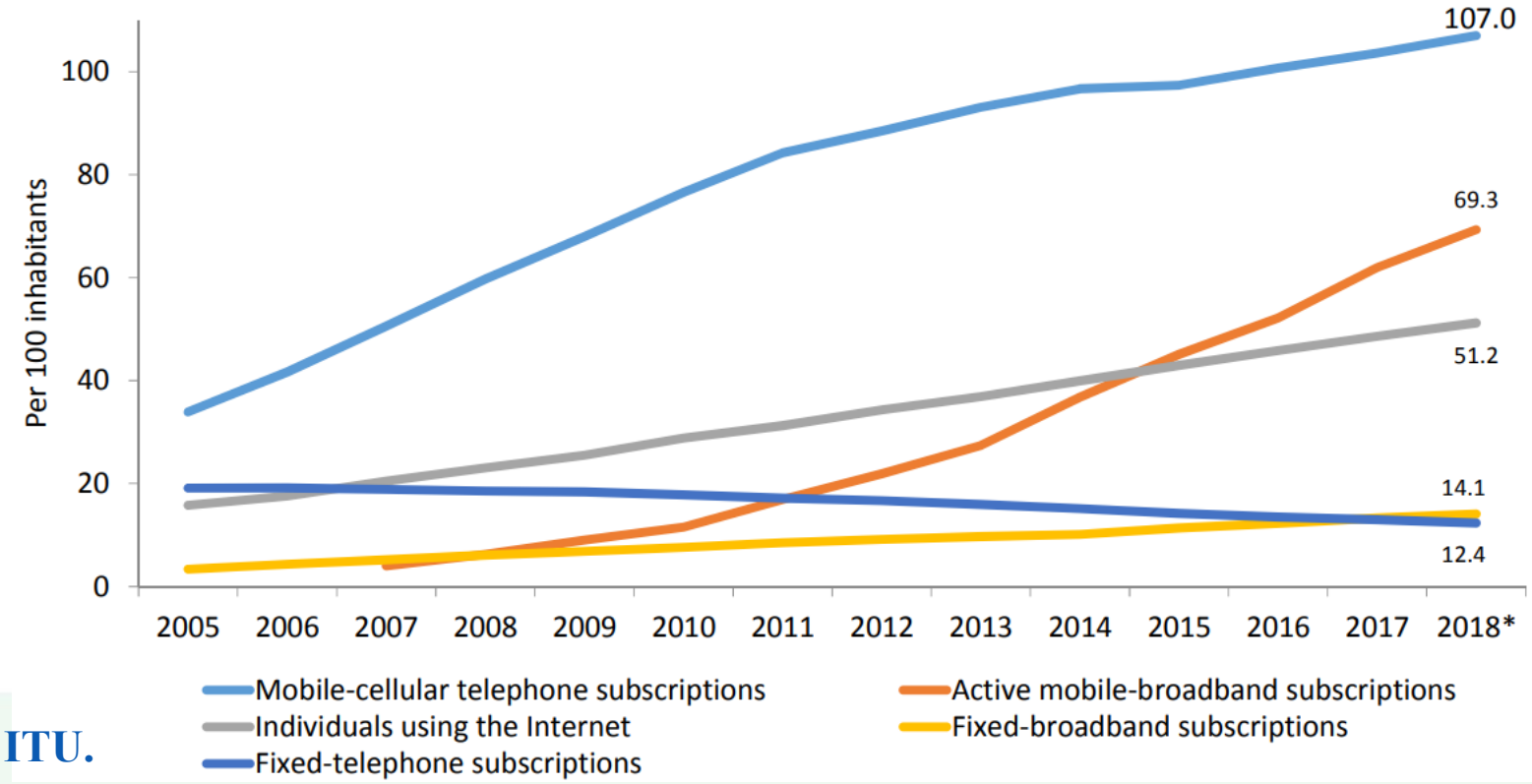
SDGs 7, 11, 12, 13, 14 and 15

SDG 14: Conserve & sustainably use the oceans, seas & marine resources for sustainable development

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

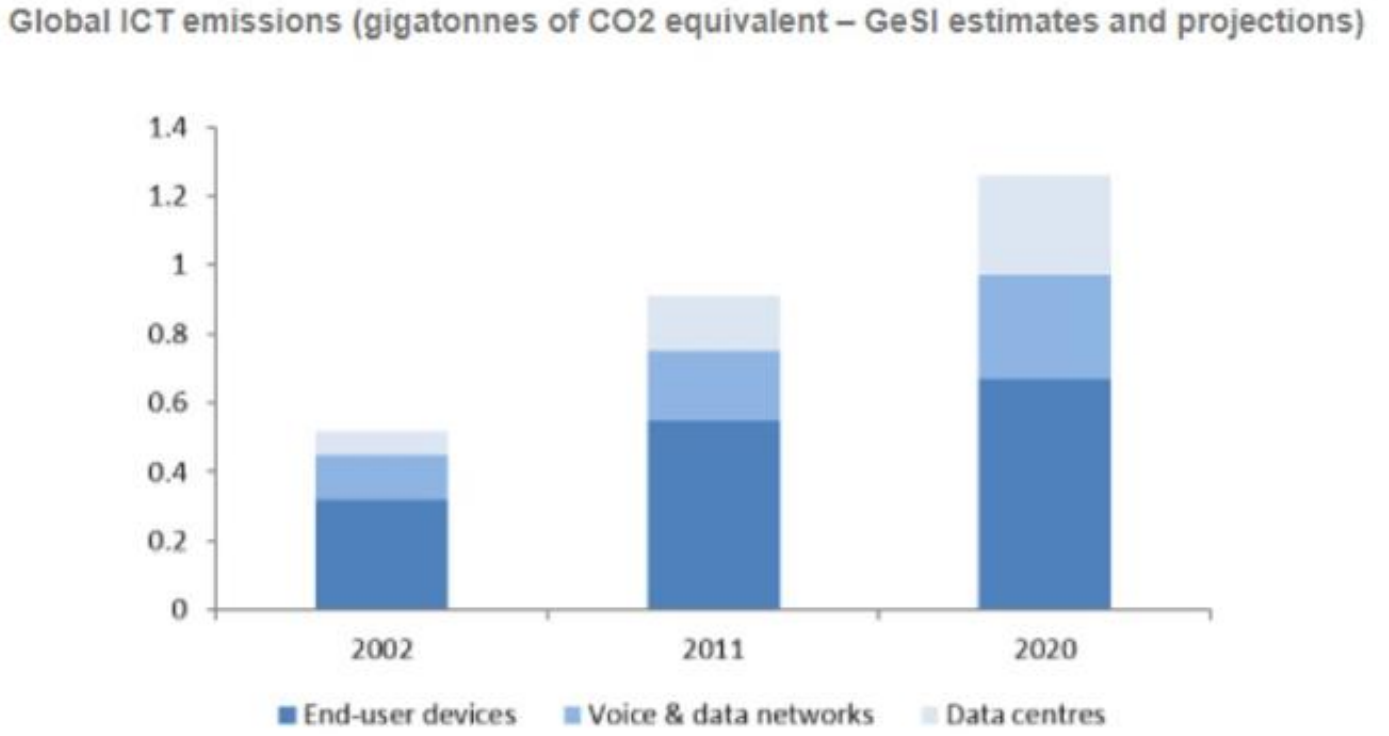
What role for ICTs?

ICTs continue to grow strongly worldwide…



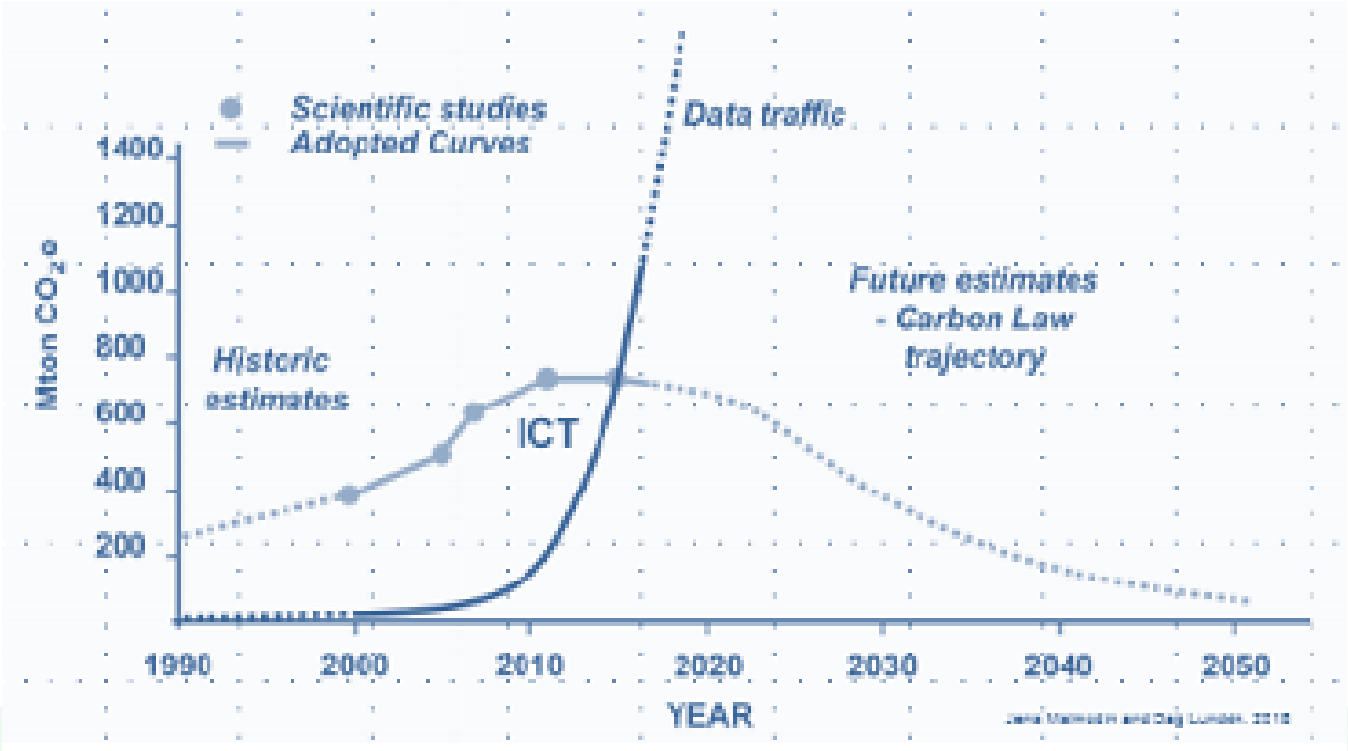
Source: ITU.

ICTs are generating growing carbon emissions…



Source: GeSI.

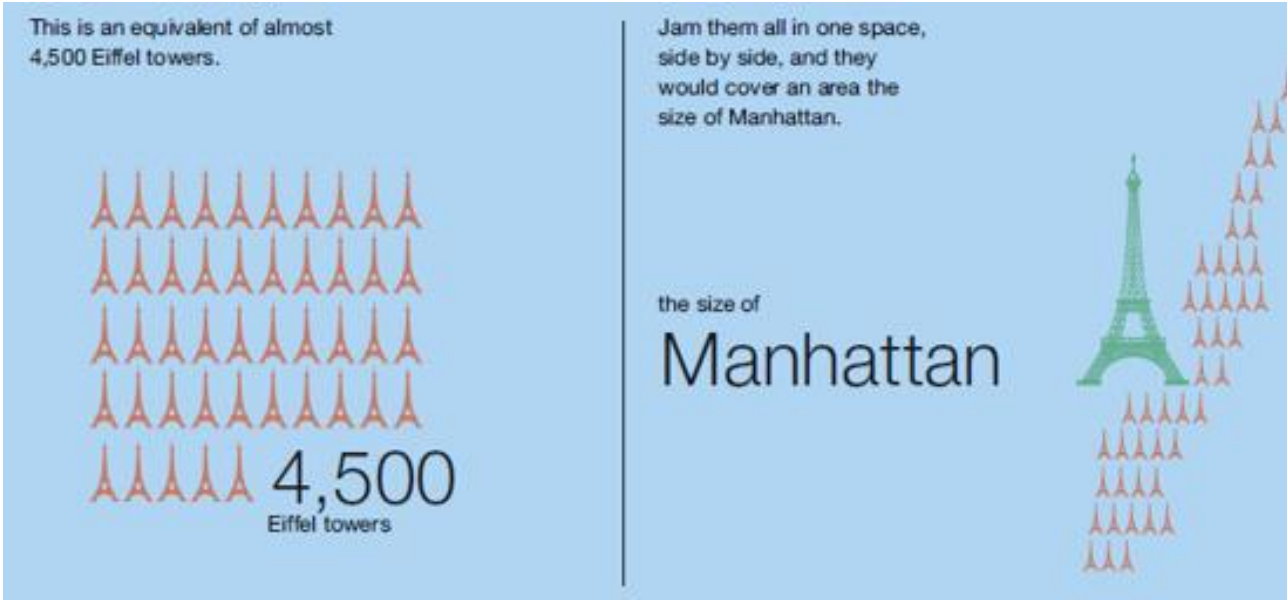
Energy footprint of ICTs going forward?



Source: Ericsson.

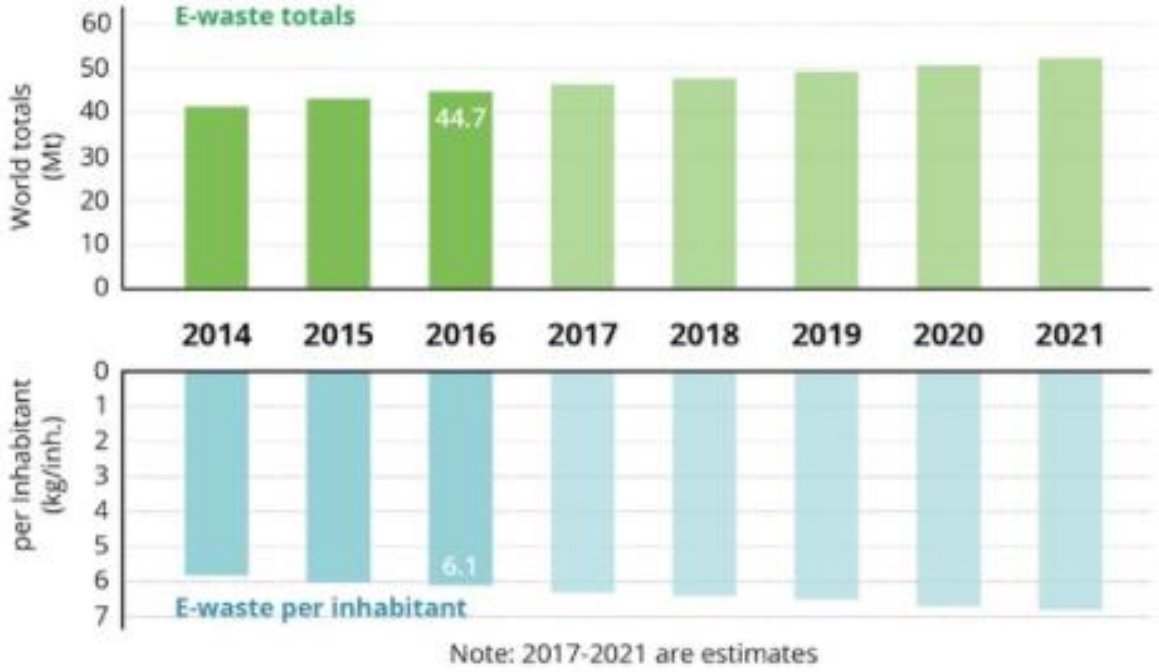
Growing amount of E-waste (UN analysis, January 2019)

In Jan 2019, ITU was part of the UN e-waste coalition that found that we generate 44.7m tonnes of e-waste per year = 4,500 Eiffel Towers of e-waste per year…



Source: ITU UN E-Waste Coalition; WBCSD/WHO, Jan. 2019,

E-waste & pollution from e-waste are growing problems

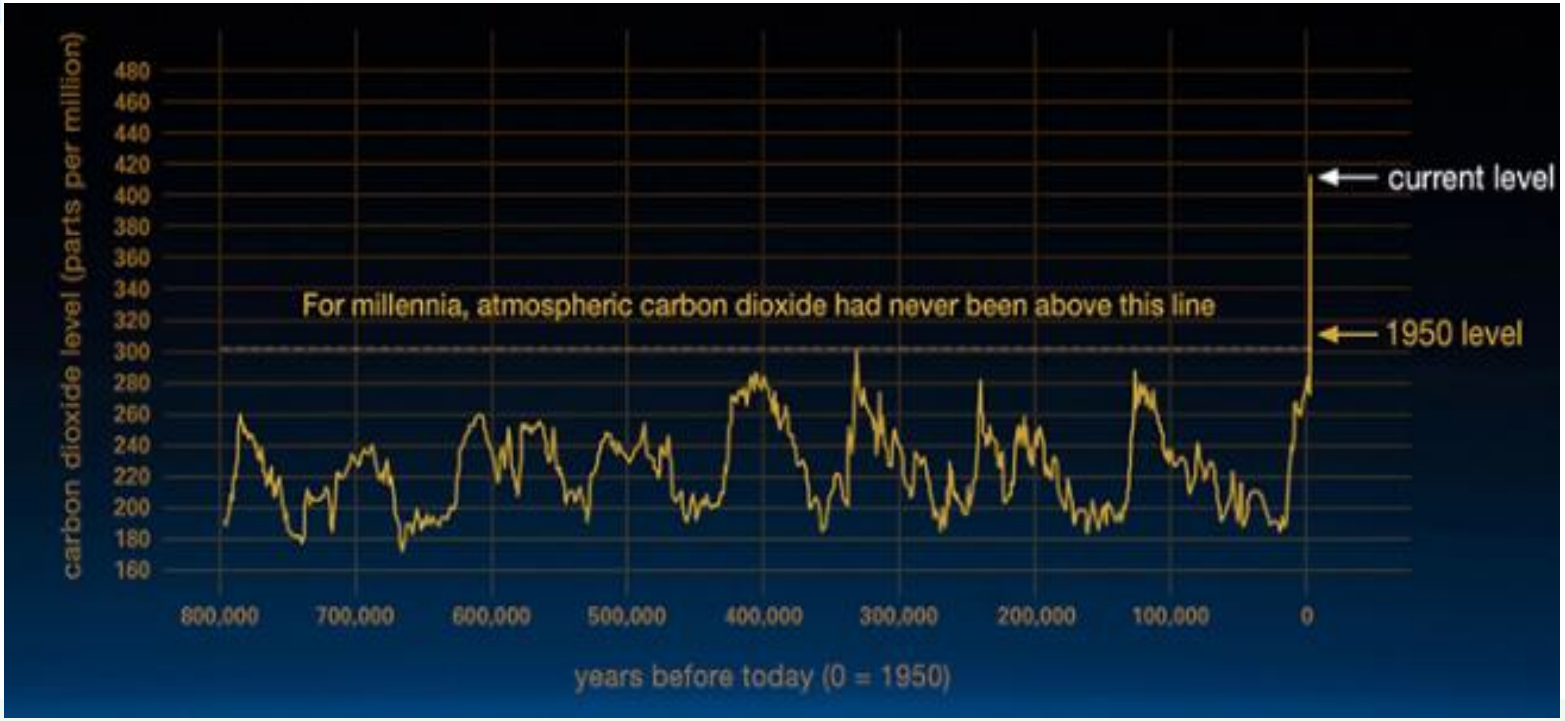


Source: UN Coalition on e-waste.

It is clear that the world's climate is changing…

Source: Worldwide Universities Network

And one key culprit is carbon dioxide (another is methane)… And what is driving that?



Source: NASA.

The role of ICTs in monitoring climate change

ICTs can help monitor climate change

ICTs can help:

- Forecast **weather** & **climate trends** better;
- Monitor **crop yields** & encourage ‘precision agriculture’;
- Monitor **disasters** (flooding, drought, landslides);
- Monitor **pollution** (air pollution, oil spills & commitments to Paris Accords).

-> Special role for satellite monitoring – role of ITU-R.

Ensuring availability of spectrum & satellite orbits

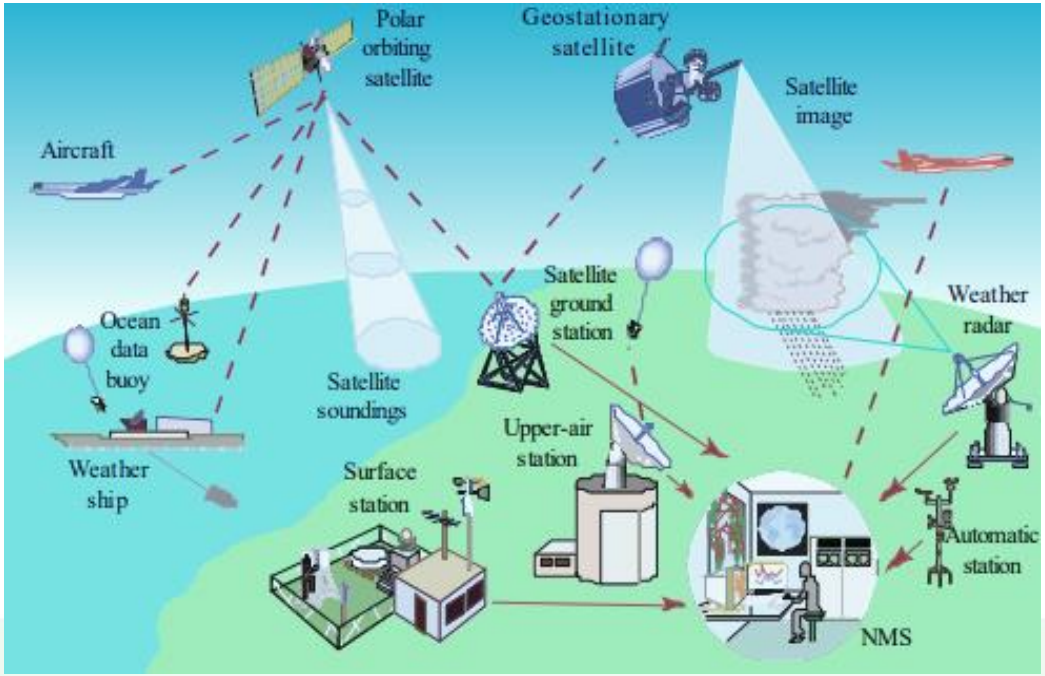
The Radiocommunication Sector (ITU-R):

- Maintains the Radio Regulations (RR) & Master International Frequency Register (MIFR);
- Allocates & manages frequency assignments for satellite systems;
- Coordinates requirements between systems;
- Develops regulatory frameworks for different and new satellite systems (e.g. nanosats, massive constellations).

Sources: https://www.itu.int/en/ITU-R/space/plans/Pages/MIFR.aspx

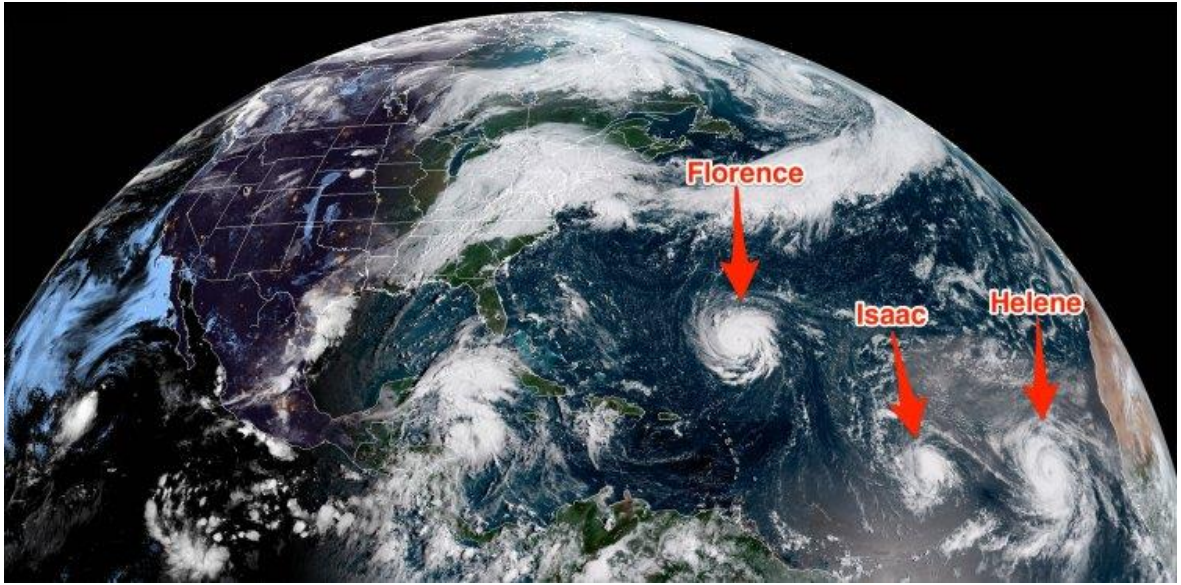
ICTs help monitor weather & climate change

WMO maintains the Global Observatory System (GOS)



Source: WMO .

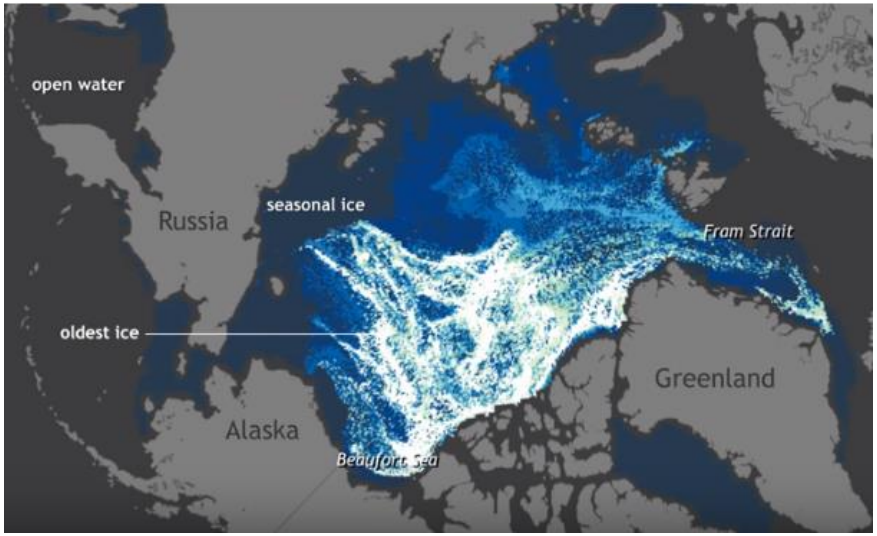
Tracking weather – Storm Severity & Frequency* (maybe*)

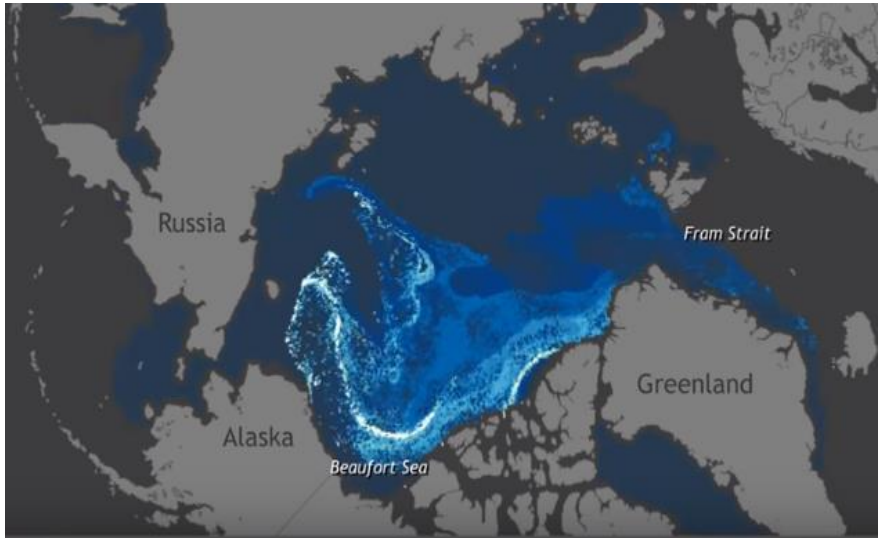


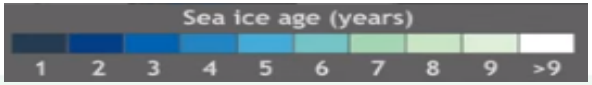
Prof. Joseph Stiglitz – in recent years, the US has lost 2% of GDP in weather-related disasters (including floods, hurricanes and fires).

NASA, * https://www.bbc.com/news/world-latin-america-49602445.

Long-term Thinning & Retreat of Arctic Ice, 1990-2015





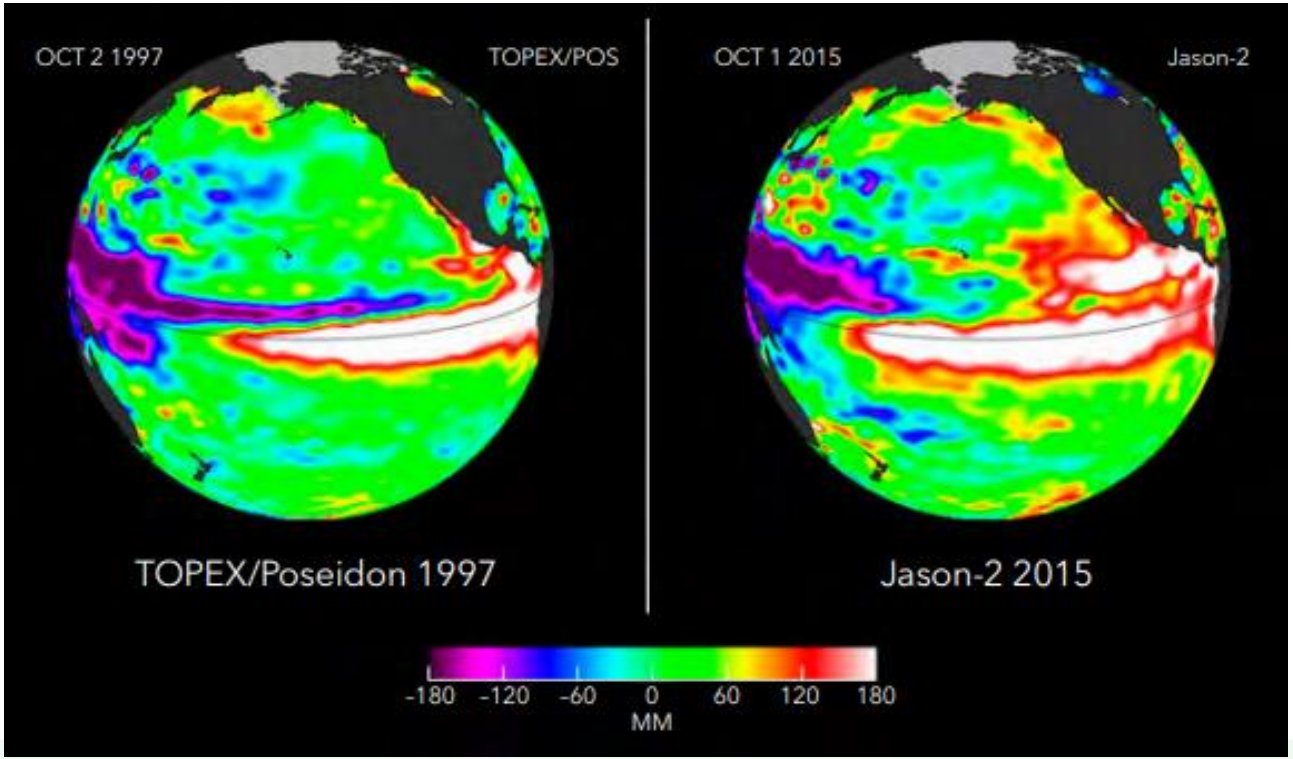


Source: US NOAA Climate.Gov.

The sea is warming & sea levels are rising, drowning coastal areas & creating the world's first 'climate refugees' in US

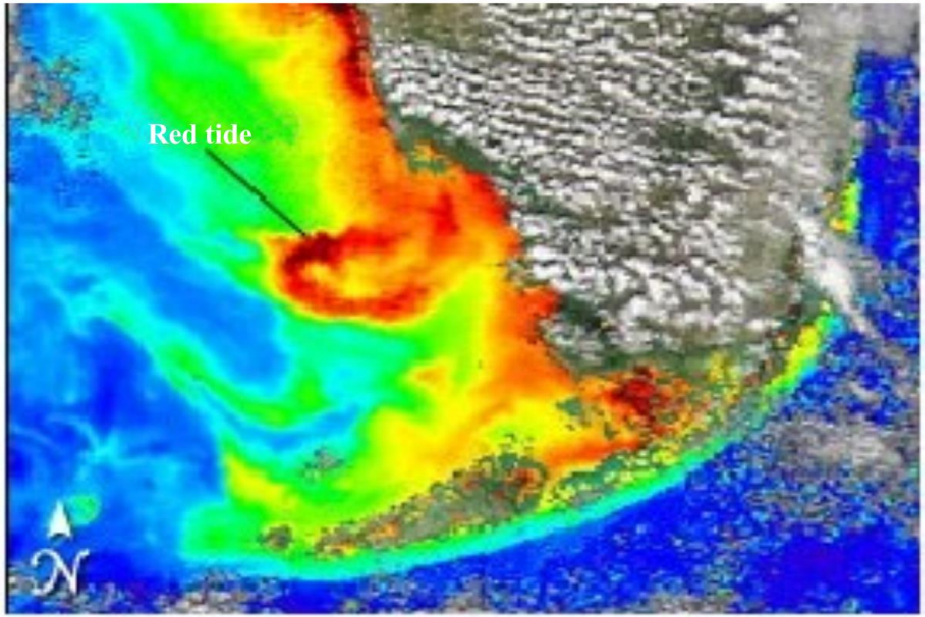
Image credit: Washington Post.

Satellites are used to monitor sea level & ocean temperature



Sources: TOPEX/Poseidon, Jason-2.

Satellites are used to monitor ocean pollution/algal blooms

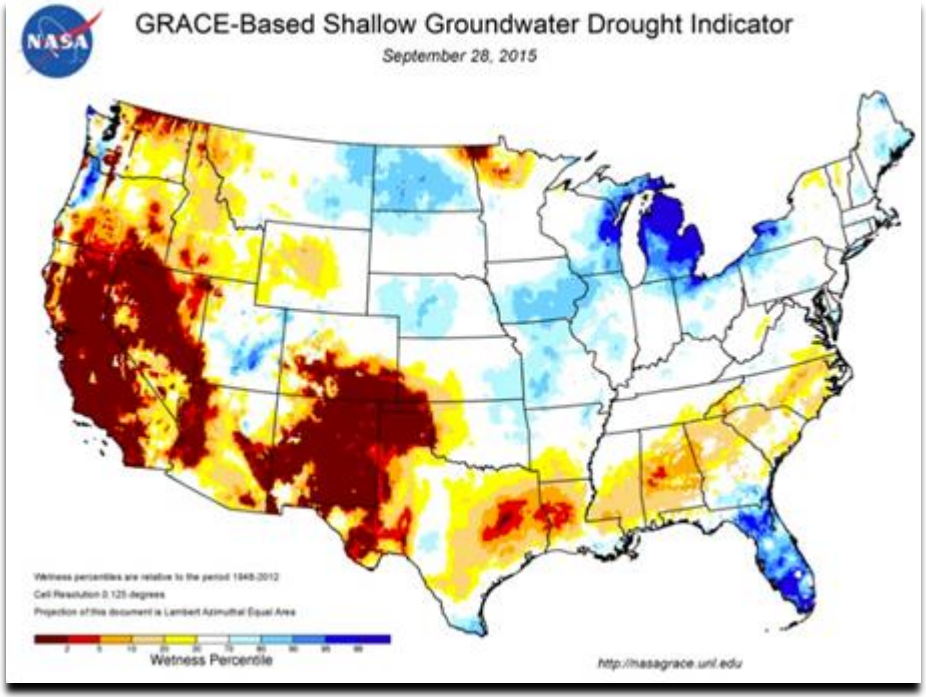


Sources: SeaWiFS instrument 21 November 2004 of Florida.

Turning this... into this…

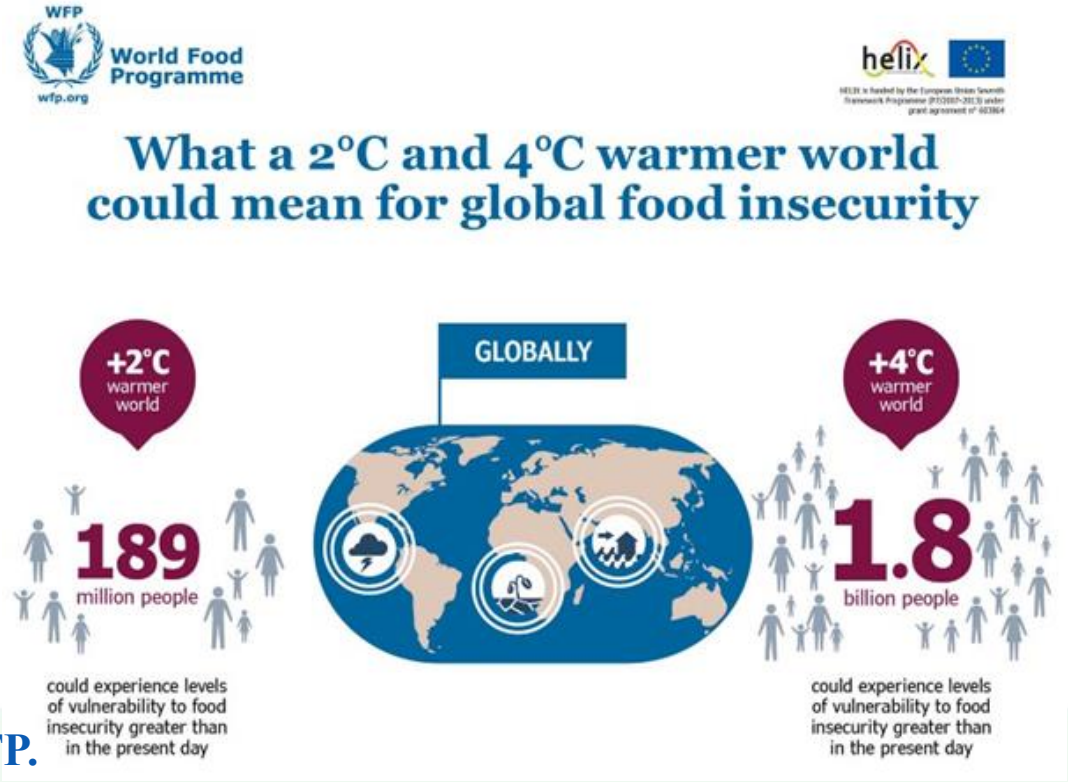
Source: https://www.atlasobscura.com/articles/sargassum-seaweed-ocean-beaches

Satellites are used to monitor drought levels



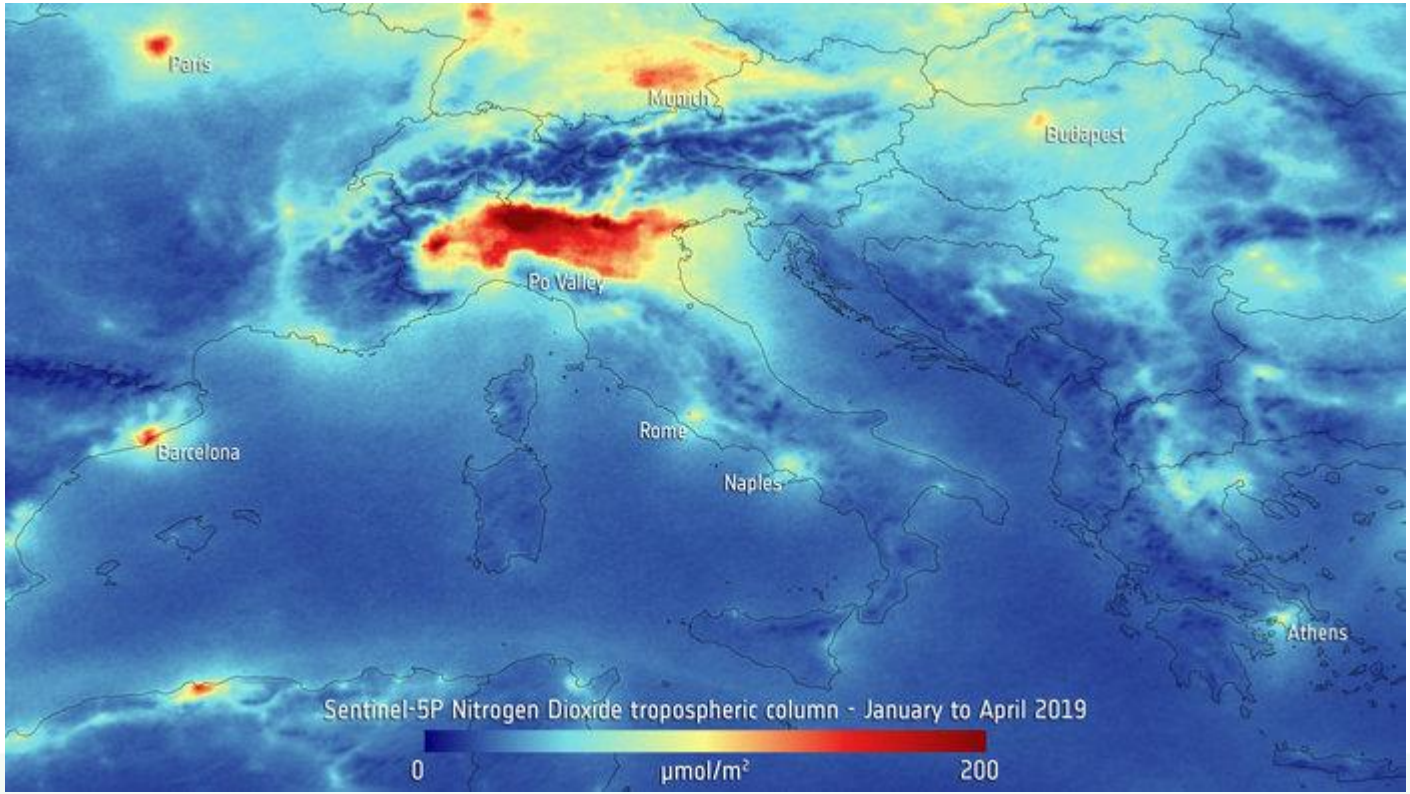
Sources: NASA Grace FO https://sealevel.nasa.gov/news/122/grace-fo-will-help-monitor-droughts.

Creating Global Food Insecurity…



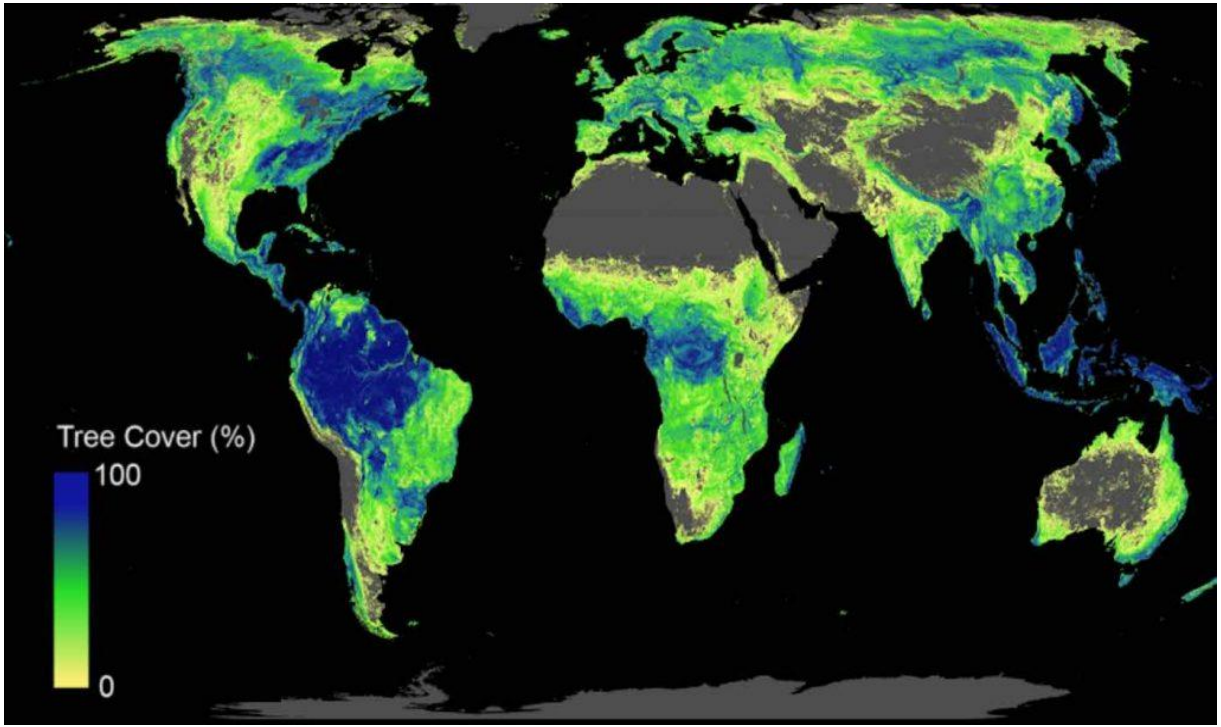
Source: WFP.

Satellites are used to monitor nitrogen dioxide emissions



Source: ESA

And map tree cover and deforestation



Source: Crowther Lab, ETH Zurich. (Also Global Forest Watch)

As forests & rainforest in many areas are destroyed...

https://www.theguardian.com/global/video/2019/aug/27/drone-footage-reveals-devastation-from-amazon-fires-video

Source: Various.

Early Warning Systems & Disaster Mgt

- Early warning systems are adaptive measures for climate change, using integrated communication systems to help communities prepare for hazardous events.
- In Cambodia, >2.5m people in 2016 were affected by floods indicating an increase in climate-related flooding. A four-year program implemented by UNDP with the Government and other partners, installing and re-activating existing Automatic Weather and Agrometeorological Stations and Automatic Hydrological Stations across Cambodia.

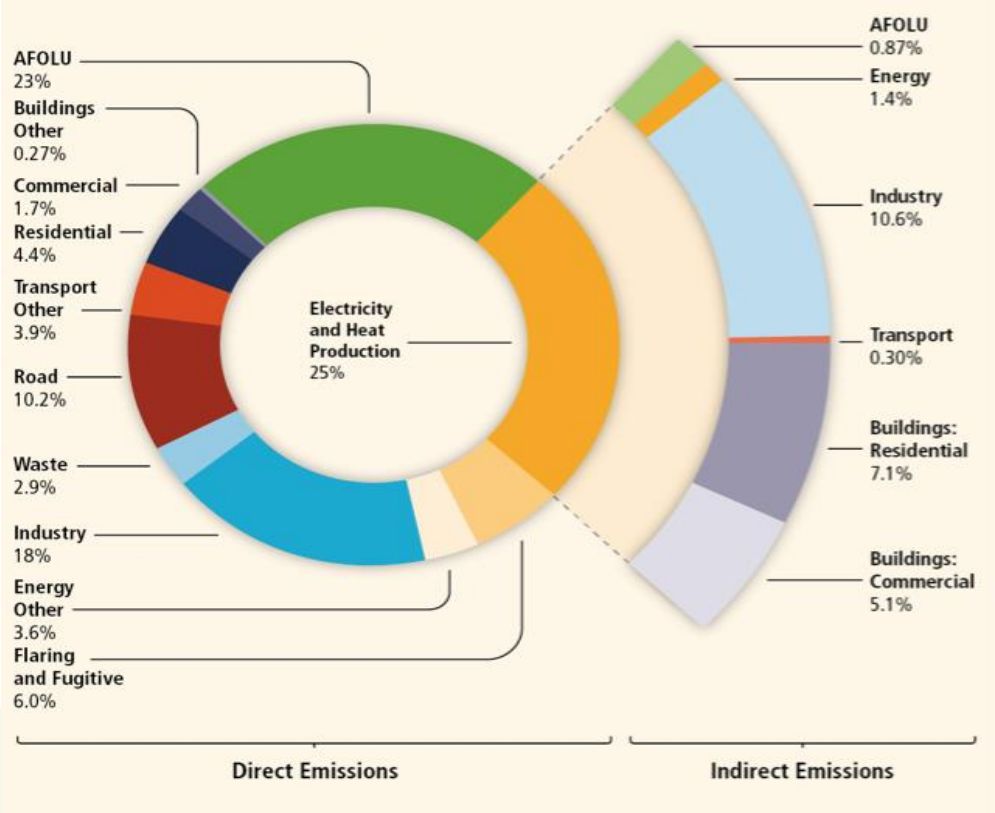
ICTs & climate change mitigation

ICTs can help mitigate climate change

ICTs can help:

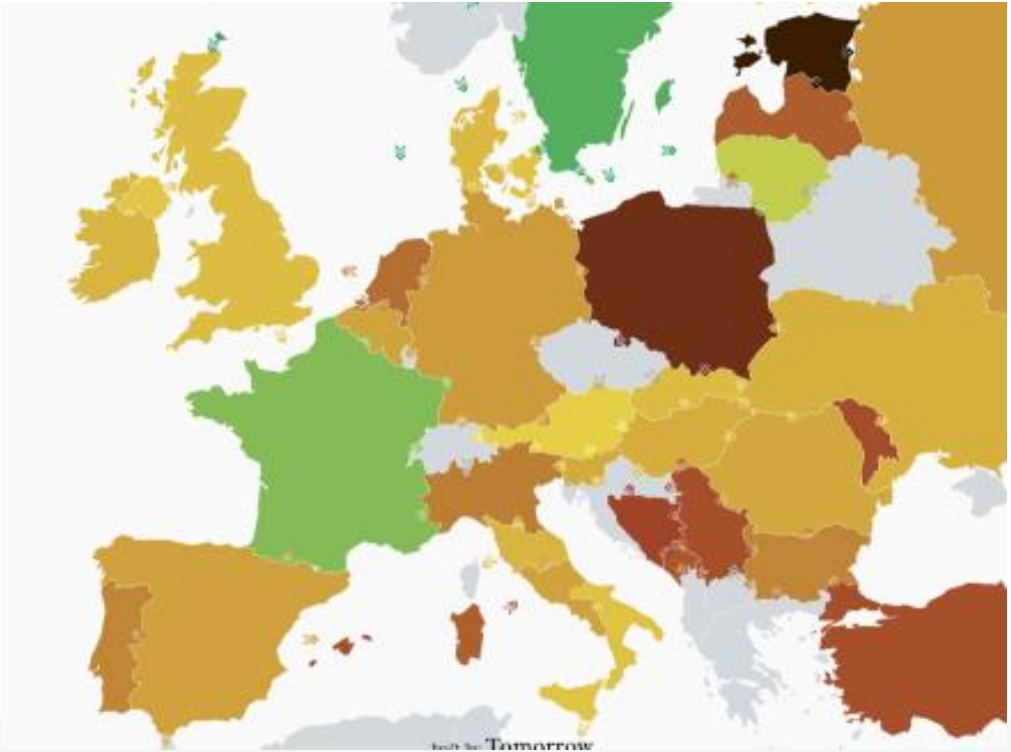
- Replace material goods (e.g. digital books);
- Help cities become smarter & more sustainable;
- Monitor climate change & help in the transition towards a green and circular economy.
- Help make water & sanitation management smarter.

Energy consumption, per sector, 2010



Source: ILO.

And a lot depends on energy production…



Source: GitHub.

ITU's role in relation to ICTs & climate change

ITU's Role

Raising awareness of the role of ICTs in the Sustainable Development Agenda

Ensuring availability of frequencies & satellite orbits for climate monitoring and forecasting

Helping plan & provide emergency telecoms/ICTs

Developing technical standards for Green ICTS

Research and development in areas related to energy efficiency, E-waste and Smart cities

Environment, Energy Efficiency & the Circular Economy

Ongoing standardization work

- E-waste management and reduction
- Circular Economy
- Sustainability - Reducing GHG to Achieve SDGs
- Energy efficiency KPIs for ICT goods, networks, services
- Efficiency of SC&C solutions
- Green Data Centres Solutions and KPI/metrics
- 5G/IMT2020 sustainable development: EE KPI/ Metrics, Power feeding solutions, environmental impact assessment

Source: ITU.

What ITU is Doing – Green Standards

ITU's role in facilitating the use of frontier technologies

- ITU-T SG5 & ITU-T SG20
- FG on Environmental Efficiency for AI & Emerging Technologies (FG-AI4EE)
- U4SSC – a UN initiative
- KPIs for SSC
- Worldwide & regional events

Source: ITU.

ITU-T SG 5 – Environment, climate change & circular economy

Lead Study Group for

- **EMC, lightning protection and electromagnetic effects**
- **ICTs related to the environment, climate change, energy efficiency and clean energy**
- **Circular economy, including e-waste**

9 Questions

4 Regional Groups

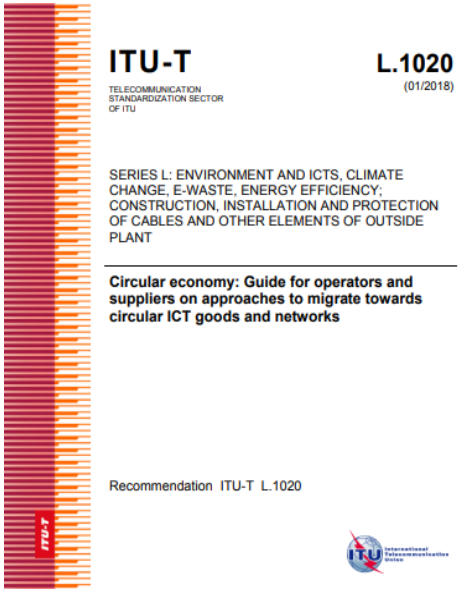
Source: ITU.

What ITU is Doing – Green Standards

Every year, ITU organizes Green Standards Week to discuss how ICTs & standards can help contribute to environmental wellbeing. The 2019 event was held in Valencia, Spain.

Source: ITU.

What ITU is Doing – Approved Recommendations



ITU-T

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

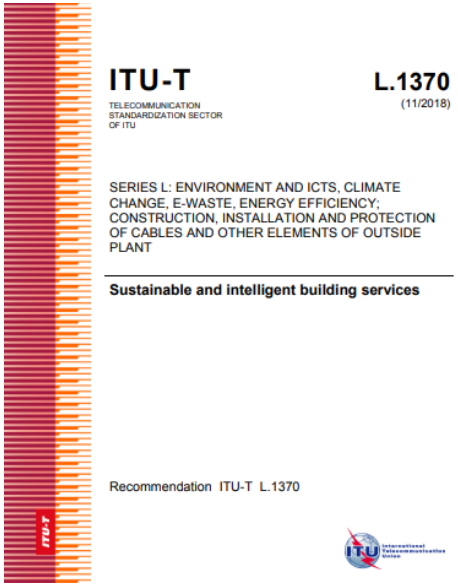
L.1020

(01/2018)

SERIES L: ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

Circular economy: Guide for operators and suppliers on approaches to migrate towards circular ICT goods and networks

Recommendation ITU-T L.1020



ITU-T

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

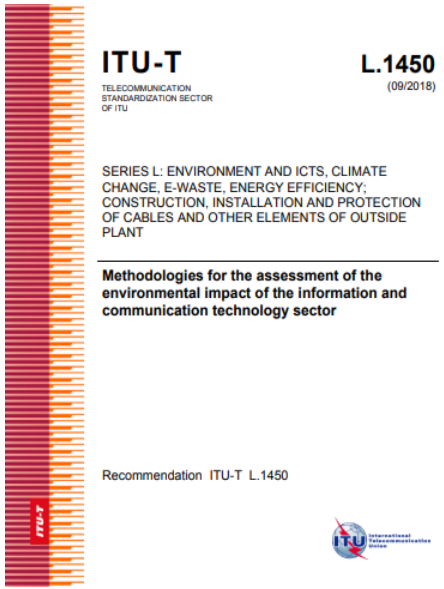
L.1370

(11/2018)

SERIES L: ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

Sustainable and intelligent building services

Recommendation ITU-T L.1370



ITU-T

TELECOMMUNICATION STANDARDIZATION SECTOR OF ITU

L.1450

(09/2018)

SERIES L: ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

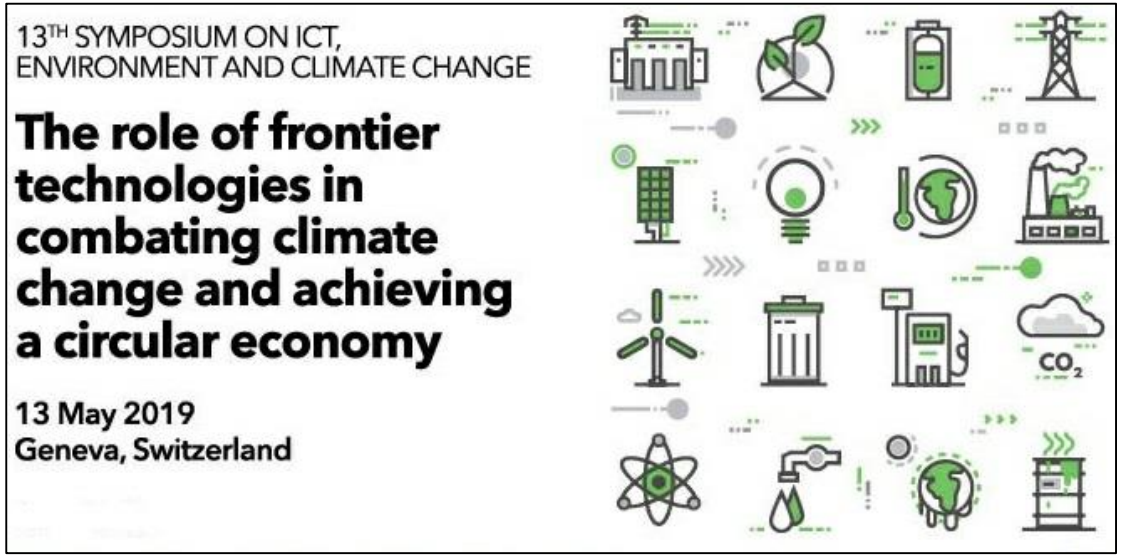
Methodologies for the assessment of the environmental impact of the information and communication technology sector

Recommendation ITU-T L.1450

Source: ITU.

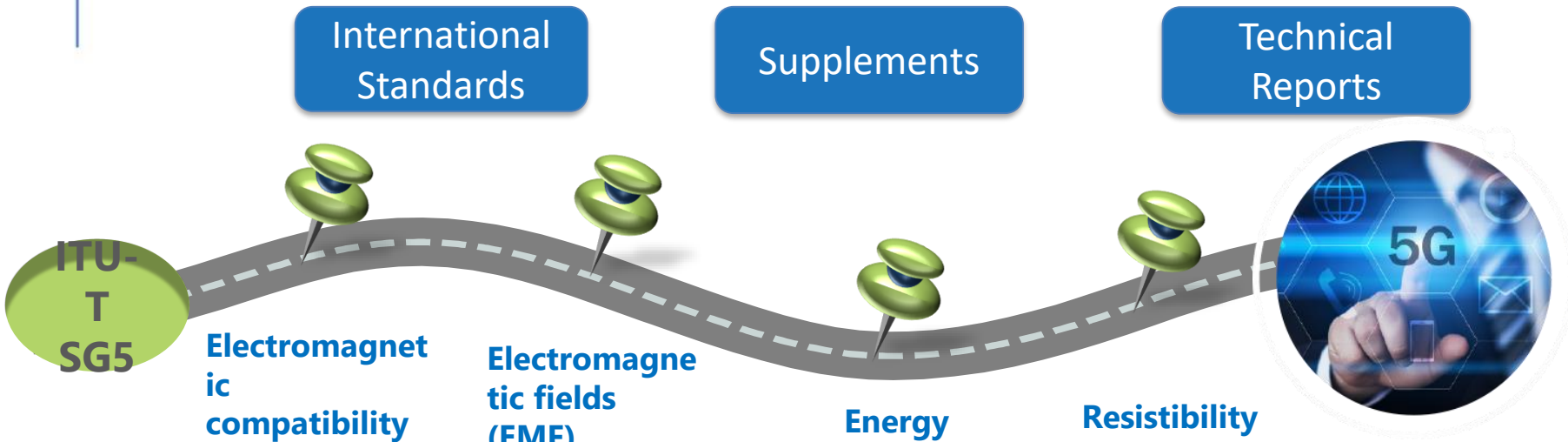
What ITU is Doing – Hosting Informed Debate on Standards

ITU hosts an annual Symposium on ICT, Environment & Climate Change to debate the key issues in relation to the carbon emissions and carbon savings possible through ICT.



Source: ITU.

What ITU is Doing – Environmental Criteria for 5G



Source: ITU.

What ITU is Doing – ITU's Smart Sustainable Cities (SSC)

ITU has a Smart Sustainable Cities Initiative to manage urban complexities, reduce urban expenditure, increase energy efficiency & improve the quality of life for urban residents.

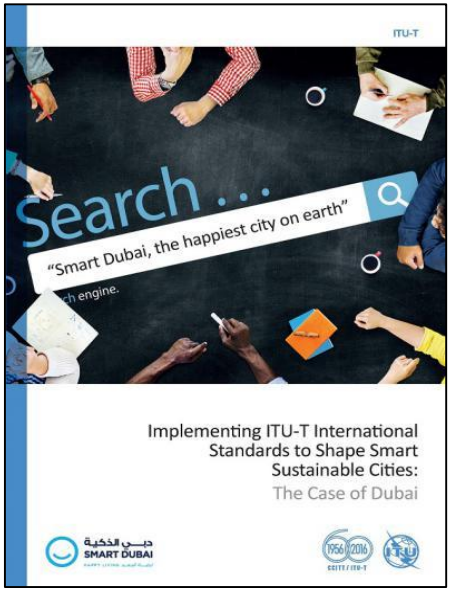
Source: https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx.

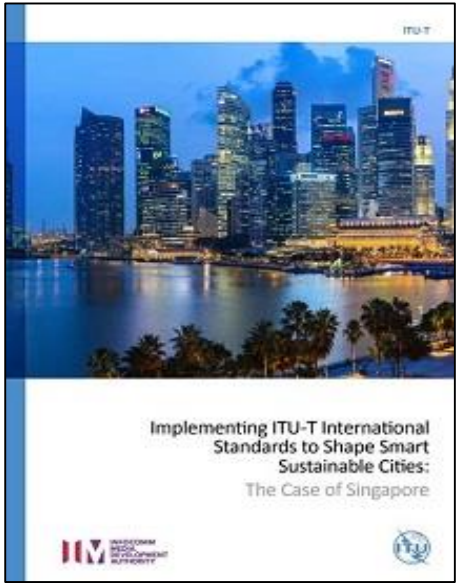
KPIs for Smart Sustainable Cities

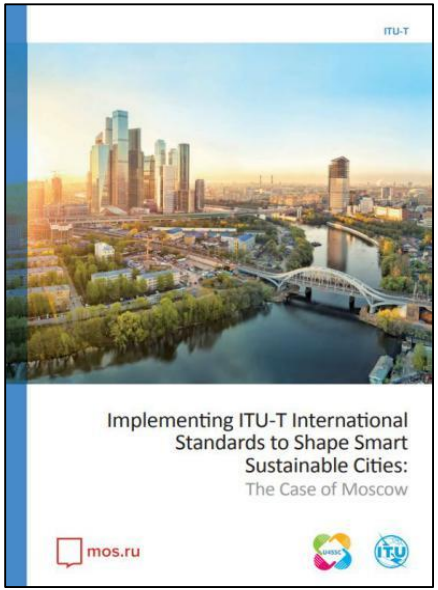
ITU has developed a set of Key Performance Indicators (KPIs) to monitor energy efficiency of ICT equipment and devices, so cities, firms and people can make informed choices.

Source: https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx.

ITU has published case studies on Standards for SSC







Source: https://www.itu.int/en/ITU-T/ssc/Pages/default.aspx.

Action is needed on all fronts, at all levels - NOW

Political action: transform global goals into national, regional and local objectives

Private action: sustainable corporate strategies aiming at reducing & zero emissions

Individual action: changing behaviors to adopt sustainable ways of living

Thank you

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