



KEYNOTE

AI and Environmental Sustainability: Measuring What Matters

Greening the digital sector and building climate resilience through data, AI and connectivity



MEASURE



MANAGE



ADAPT AND BUILD RESILIENCE

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International Telecommunication Union (ITU)

Our mission: Connect the world



**Specialized United Nations
(UN) Agency for
Telecommunications &
Information and
Communication
Technologies (ICTs)**

3

Sectors

Standardization

Radiocommunication

Development

194

Member States

1000+

**Companies, universities,
and international and
regional organizations.**

**Rich network of experts in
the global ICT ecosystem**



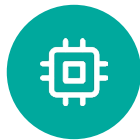
Digital growth, especially AI, are changing the sector's environmental footprint

You cannot manage what you do not measure. As connectivity, data and AI adoption accelerate, the digital sector's energy and emissions footprint is growing in ways that are still only partly visible to policymakers and regulators.



415 TWh

electricity consumed by global data centres in 2024, 1.5% of world electricity use



2.1%

of global electricity consumed by 164 of 200 digital companies tracked by ITU & WBA (2023)

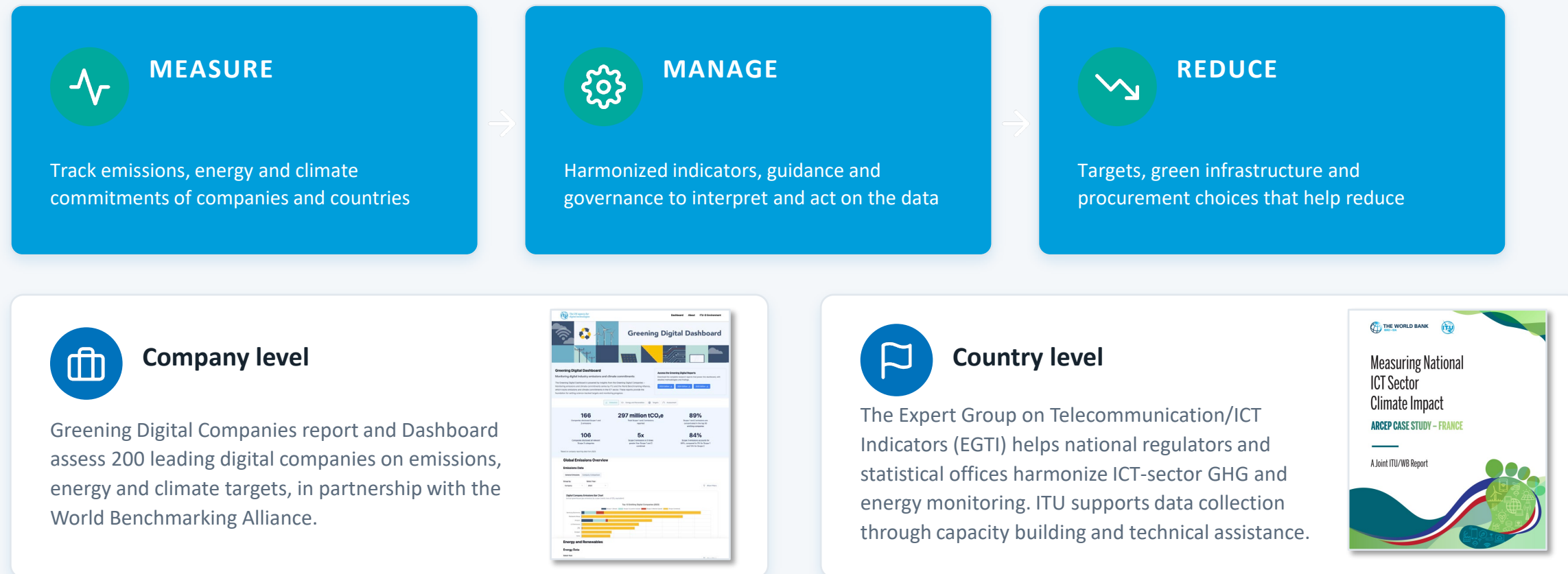


2x+

IEA projected growth in global data-centre electricity demand by 2030



Measure, manage, reduce - at company and country level



Grounded in ITU's mandate: WTDC Resolution 66 (Rev. Baku, 2025) and PP Resolution 182 (Rev. Bucharest, 2022) on ICTs, climate change and the environment; Strategic Plan Target 2.5 on ICT's contribution to climate action.



Greening Digital Companies – 5th edition launches tomorrow



Embargoed: The 2026 edition of Greening Digital Companies launches on 2 September 2026 and remains under embargo today. No figures from the new report can be shared in this session — the numbers below are from the current, published 2025 edition (FY2023 data).

What the 2025 edition (4th edition) showed

581 TWh

electricity consumed by 164 of 200 companies in 2023 — just 10 companies accounted for over half

297M tCO₂e

Scope 1 & 2 emissions reported by 166 of 200 companies — up 1.4% compared to the previous year

150%

rise in 2023 operational emissions of companies heavily investing in AI, compared to their 2020 levels

18%

of company emissions covered by science-based targets that are on track — ambition is outpacing delivery





AI is reshaping energy demand faster than the sector can green it



Electricity demand is accelerating

Global data-centre electricity use is projected to more than double by 2030 as AI training and inference scale up, according to the IEA.



Emissions are following

Digital companies with heavy AI investment saw operational emissions in 2023 rise to 150 per cent of their 2020 levels.



Hardware is part of the story

Electricity linked to AI chip production and use has grown sharply, with estimates now exceeding the electricity consumption of entire countries.

How some companies are responding



Long-term nuclear power purchase agreements to secure carbon-free electricity for AI data centres



AI-optimized efficiency - using AI itself to cut the energy intensity of AI infrastructure



Growing calls for AI-specific disclosure: reporting the energy and emissions of training and operating models



Emerging efficiency benchmarks for data centres supporting AI development and operations



Climate ambition is rising - transparency and delivery lag behind



Renewable energy

- 5 digital companies are in the world's top 10 corporate clean-energy buyers
- 23 of 200 companies reported using 100% renewable electricity – mainly Europe and USA
- Renewable electricity use is rising among IT software, services and electronics companies, while telecom operators lag behind



Scope 3 - the hidden majority

- Scope 3 makes up 84% of emissions for companies with full disclosure
- 106 of 200 companies fully disclosed Scope 3 in 2023, up from 75 in the previous report
- Many targets are intensity-based, not absolute reductions



Science-based targets

- 92 companies committed to achieving net-zero emissions: 41 by 2025, 42 by 2024 and 9 by 2030
- Only 4 of the top 15 highest emitters have committed to SBTs
- Just 18% of sector emissions are covered by targets on track



Find out about the latest trends

ITUWebinars

Key insights of the Greening Digital Companies 2026: Monitoring Emissions and Climate Commitments report

3 September 2026
13:00-14:30 CEST

Join us online!
itu.int/go/webinar-GDC26



World
Benchmarking
Alliance





AI's growth runs through data centres — ITU guidance helps green them

As AI drives new data-centre construction and rising power loads, the ITU-World Bank practitioner's guide (with BMZ and GIZ) gives policymakers, regulators and operators a shared roadmap across six dimensions of green data-centre practice.



Climate-resilient data centres

Adapting sites to floods, heat and other climate hazards



Sustainable design & buildings

Site selection, layout and construction choices



Sustainable ICT

Efficient, right-sized IT and network equipment



Sustainable energy

Renewable sourcing and efficient power infrastructure



Sustainable cooling

Water- and energy-efficient cooling strategies



E-waste management

Circular approaches to equipment end-of-life



National level monitoring

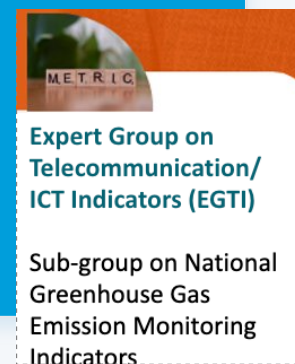
Company reporting tells us about individual organisations, not national footprints. ITU's **Expert Group on Telecommunication/ICT Indicators (EGTI)** established a dedicated subgroup - chaired by Arcep, France - to build a harmonized way for countries to measure the ICT sector's GHG emissions and energy use.

-  Covers Scopes 1, 2 and 3, energy, electricity and renewable-energy use
-  Spans four ICT subsectors: telecom operators, data centres, network equipment and end-user device manufacturers
-  Each indicator carries two priority scores: environmental relevance and data-collection feasibility
-  Validated against BEREC, Arcep (France) and ITU-T Recommendation L.1472

EGTI Sub-group in brief

- Subgroup established following EGTI's 15th meeting, September 2024
- Framework presented at the 16th EGTI meeting, Geneva, September 2025
- Chaired by Arcep (France); open to all interested experts
- 2025-2026 cycle: pilot implementation in volunteer countries, including Brazil

Event at 17th EGTI meeting on 10 September 2026 to discuss next steps for 2027: discussion forum, guideline development and technical assistance





A priority indicator set to start now - piloting in 13 countries

Full indicator framework

The complete 'wish list': detailed indicators across corporate emissions, Scope 3 categories, energy and renewable breakdowns, network technology, site-level data, water and materials. Retained as a long-term methodological reference - goal is to start and build experience over time.

Revised priority questionnaire: the common core

- ✓ All actors: Scope 1 & 2 emissions, total energy, electricity and renewable electricity
- ✓ Telecom operators: network energy use, plus Scope 3 leased-asset categories
- ✓ Data centre operators: number of sites, power load, PUE, energy of sites and IT equipment
- ✓ Network equipment and end-user device manufacturers: specific energy use indicators

Brazil

Anatel: Regulator-led pilot

- 49 companies shortlisted, 15 submitted data (31% response rate)
- Telecom operators reached 80%+ national market coverage
- 87% reported Scope 1, 93% Scope 2, 73% Scope 3 among respondents

Malaysia

MCMC: Sustainability Framework & Roadmap 2030

- 47 organisations, 116 participants across 16 interviews and 4 roundtables
- Aggregated 2024–2025 data for 5 major telecom operators
- Covered approximately 95% of the national telecom market

Norway

Nkom: Digitalisation for Sustainability Index

- Combines operator data with lifecycle-based intensity factors
- Digital, quality-graded data architecture (D4S Beta project)
- Modular design for future expansion to water, materials, e-waste

Also engaged in 2026: South Africa, Tanzania, Egypt, Comoros, Zambia, Portugal, Czech Republic, Philippines, Azerbaijan, Greece.



Start with telecom operators, then expand as capacity grows

-  Telecom is the most feasible starting point - regulators already engage operators and many already disclose Scope 1, 2 and energy data
-  Piloting showed that data centres sit outside traditional telecom regulation, requiring new institutional partners or a mandate change
-  Network equipment and end-user device manufacturers are hardest to cover - meaningful only where plants are physically located; not relevant to countries not manufacturing
-  Institutional fragmentation is a recurring barrier - mandates split across telecom, environment and statistics bodies

A phased global approach

Phase 1

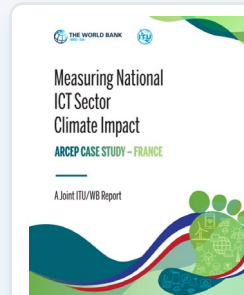
Establish governance; begin with telecom operators representing ~80% of the national market

Phase 2

Expand to data centres and device manufacturers as capacity and mandates allow

Ongoing

Continue pilots, share lessons, and refine the indicator list through EGTI



Read the Arcep case study

The joint ITU-World Bank study documents the phased approach Arcep followed, with lessons that are applicable to other countries based on the pilot experience.

A further case study with Anatel on Brazil's pilot is in preparation — more later in today's session.



PART 2

Reducing the footprint is half the story. The other half is adaptation and resilience.

Digital technology does not only carry an environmental cost - it is also one of our most powerful tools for climate adaptation, disaster preparedness and saving lives when hazards strike.





A UN target: everyone on Earth protected by an early warning system

Launched by the UN Secretary-General in March 2022, Early Warnings for All (EW4All) drives universal early-warning coverage through a 4 pillar value cycle.



01

Disaster risk knowledge

UNDRR led: Understanding hazards, exposure and vulnerability



02

Detection & forecasting

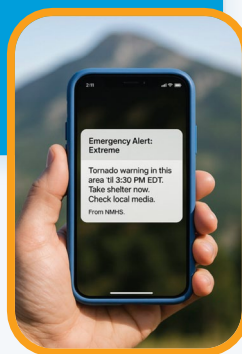
WMO led: Observation, monitoring, analysis and forecasting



03

Warning dissemination & communication

ITU led: getting warnings to reach people, everywhere



04

Preparedness & response

IFRC led: Turning warnings into timely, effective action



Source: UN Secretary-General's Early Warnings for All initiative; Multi-Hazard Early Warning System (MHEWS) value cycle.



AI across all four early warning pillars

The **AI for EW4All group** unites experts in AI and data science, disaster risk management, and climate and environmental science - bridging cutting-edge AI research with the practical needs of early-warning practitioners. *Meets the last Thursday of every month – contributions welcome relevant to EWS.*



AI for MHEWS report

AI can help address gaps across the early warning value cycle - from integrating fragmented risk data and improving localised and impact-based forecasting, to making warnings more targeted, accessible and actionable, and strengthening anticipatory decision-making.



AI Solutions Catalogue

An open catalogue of AI tools, pilots and products relevant to multi-hazard warning systems

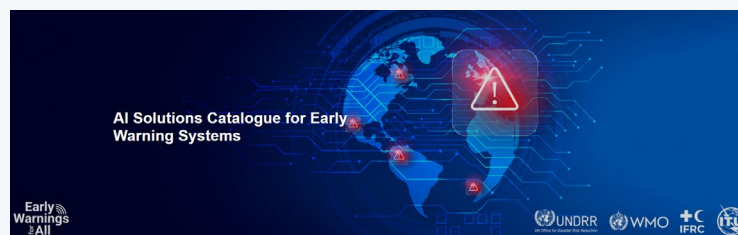
Submit a solution or explore the catalogue:
www.itu.int/ew4all



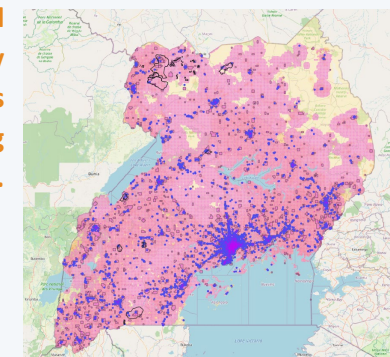
AI Country Pilots

Example: Early Warning Connectivity Map

Developed by ITU, Microsoft's AI for Good Lab, Planet and IHME/University of Washington, the EWCM combines AI with satellite imagery to map population density against connectivity - revealing where alerts are hardest to deliver.



Guides investment and dissemination-strategy decisions so that no one is left behind by warning systems.





Warnings reaching people and the last mile

Cell Broadcast is the communications layer that turns forecasts and risk data into warnings people actually receive — instantly, and without needing to register a phone number.



Instant delivery

Alerts reach phones in seconds, even during network congestion, building on existing infrastructure



One-to-many technology

Alerts all devices in a targeted geographic area at once



Works on all networks

2G, 3G, 4G/LTE, 5G and beyond



Grabs attention

Loud alert and vibration, even on silent mode



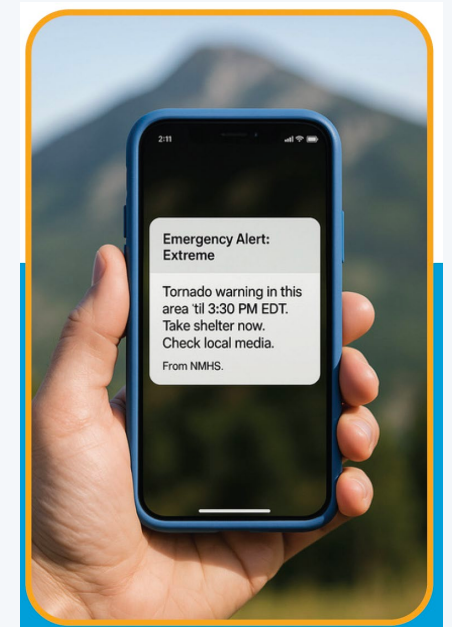
Unmissable

Appears directly on screen and is difficult to opt out of



Personalized language

Delivered in the recipient's preferred language





Countries implementing mobile early warning can learn from each other

As lead of EW4All Pillar 3, ITU convenes a **Technical Expert Group (TEG)** for countries implementing and using mobile early warning systems — a space to exchange experience, review each other's work and build expertise in last-mile communication.



Monthly exchange

A private closed Microsoft Teams-based network meeting regularly, every month



National experts

Experts responsible for Public Warning System implementation; commercial actors excluded.



Technical focus

PWS architecture and regulation, cell broadcast features, alerting by satellite



Member-led agenda

Members suggest and vote on the topics for each next meeting



Peer review

A restricted platform for studies, regulatory texts, tenders and use cases



Lessons shared out

Good practice carried to EW4All events and ITU publications

Express interest to join: Amélie Grangeat, Disaster Preparedness Specialist (amelie.grangeat@itu.int) and Vanessa Gray, Head, Climate and Emergency Telecommunications (vanessa.gray@itu.int), ITU BDT.



CLOSING MESSAGE

Sustainable digital transformation

Networks, data centres and devices are the backbone for both agendas: reducing the sector's own footprint, and delivering the connectivity that keeps early warnings — and climate adaptation more broadly — reaching everyone.



Measure the footprint

Company and country data reporting — Greening Digital Companies report, Green Digital Dashboard, EGTI and technical assistance



Reduce it

Green data centres, science-based targets, harmonized reporting and better AI practice



Adapt and build resilient infrastructure

The networks we green also deliver societal value as demonstrated through EW4All — warnings delivered to everyone through Cell Broadcast, with gaps identified by the Early Warning Connectivity Map



Thank you

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