



Enhancing energy efficiency in digital technologies to reach Net Zero Carbon

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Enhancing efficiency

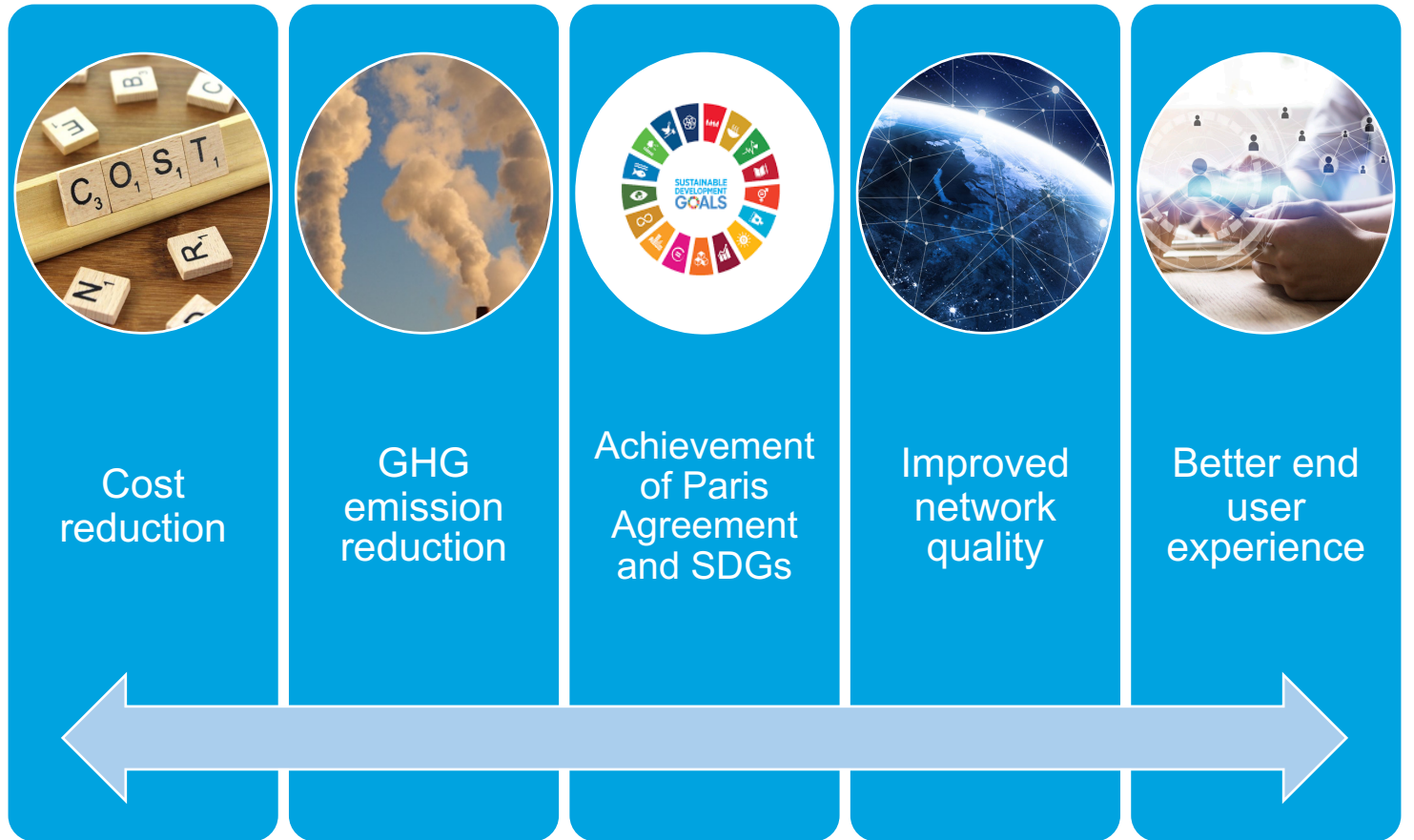


More than 90 percent of network cost spent on energy, consisting mostly of fuel and electricity, the demand for energy-saving measures from telecom operators is growing

Telecom operators account for 2 percent to 3 percent of total globally energy consumption, placing them at the forefront of the most energy-intensive companies worldwide.



Importance of Efficiency



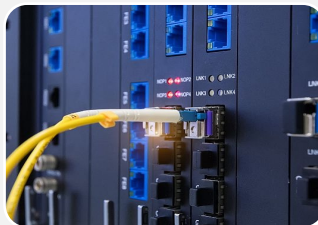
To improve the energy consumption of ICTs and digital technologies to reduce its impact is important to:

Understand the **metrics** and continually improve **energy performance**.

Adopt international standards, best practices and sustainable energy policies to **further decarbonize** ICTs and digital technologies



Energy Efficiency Standards



At product level

- ITU-T L.1310: Energy efficiency metrics and measurement methods for telecommunication equipment
- ITU-T L.1320: Energy efficiency metrics and measurement for power and cooling telecommunications and data centres equipment for
- ITU-T L.1390: Energy saving technologies and best practices for 5G RAN equipment



At site level

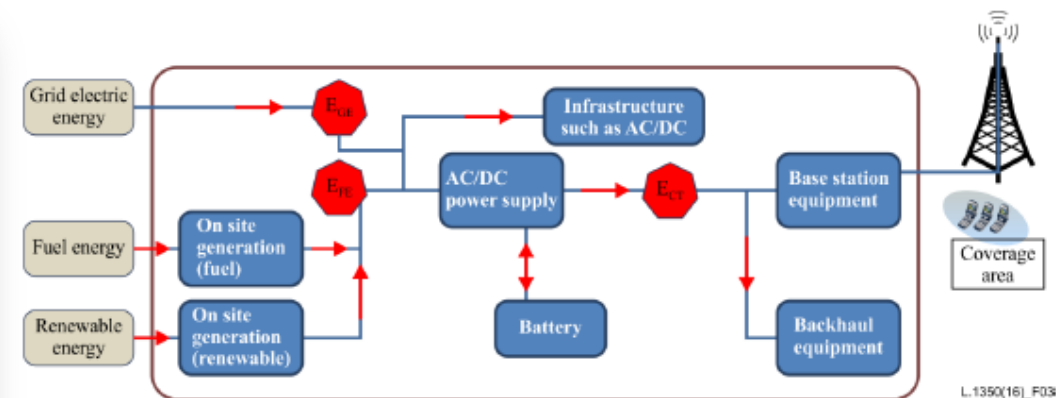
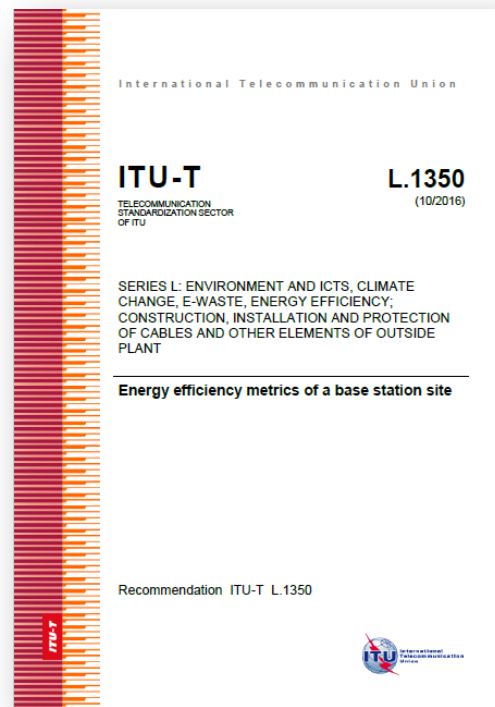
- ITU-T L.1350: Energy efficiency metrics of a base station site
- ITU-T L.1351: Energy efficiency measurement methodology for base station sites



At network level

- ITU-T L.1331: Assessment of mobile network energy efficiency
- ITU-T L.1332: Total network infrastructure energy efficiency metrics

Energy Efficiency Metrics of a Base Station Site

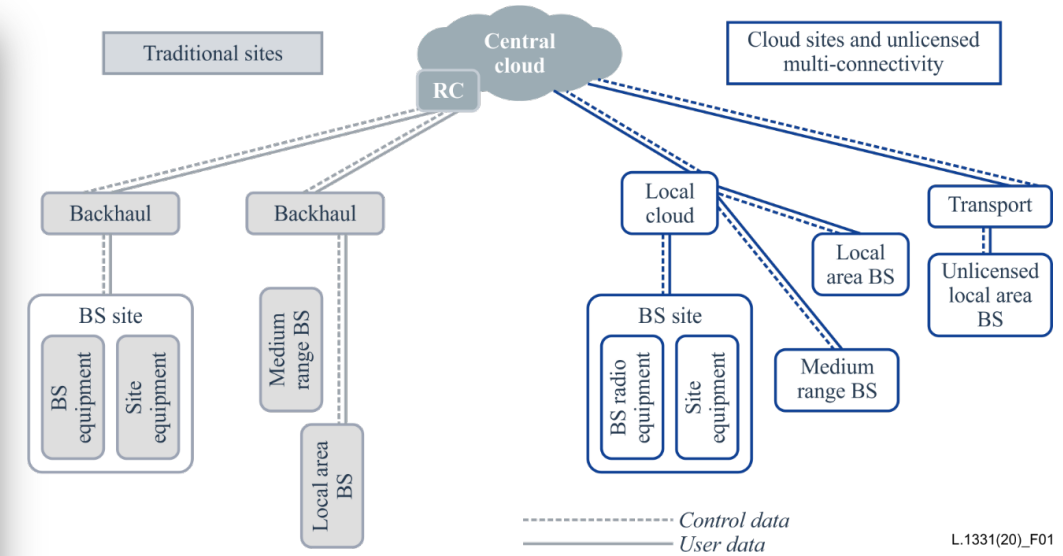
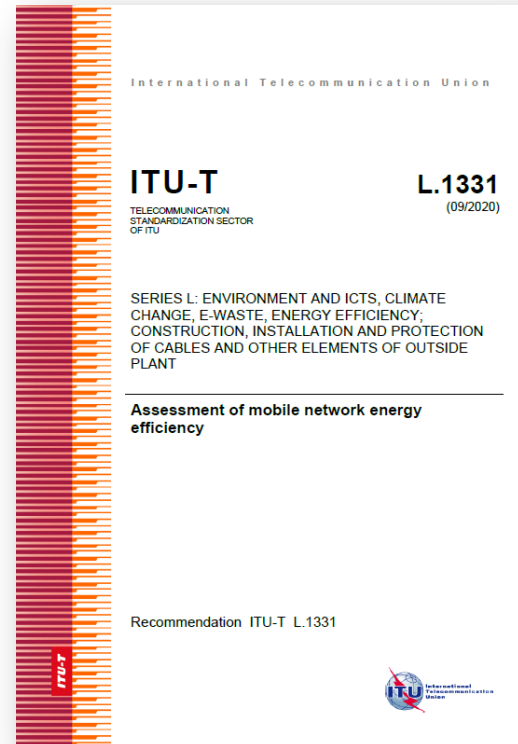


Provide a **KPI** to **measure** the **efficiency** of a **Base Station site** allowing to improve the performance of the entire mobile network . Complemented with standard ITU-T L.1351 which provide the measurement methodology.

Higher the site energy efficiency (SEE) = better the site

$$SEE = \frac{E_{CT}}{E_{TS}} \times 100\%$$

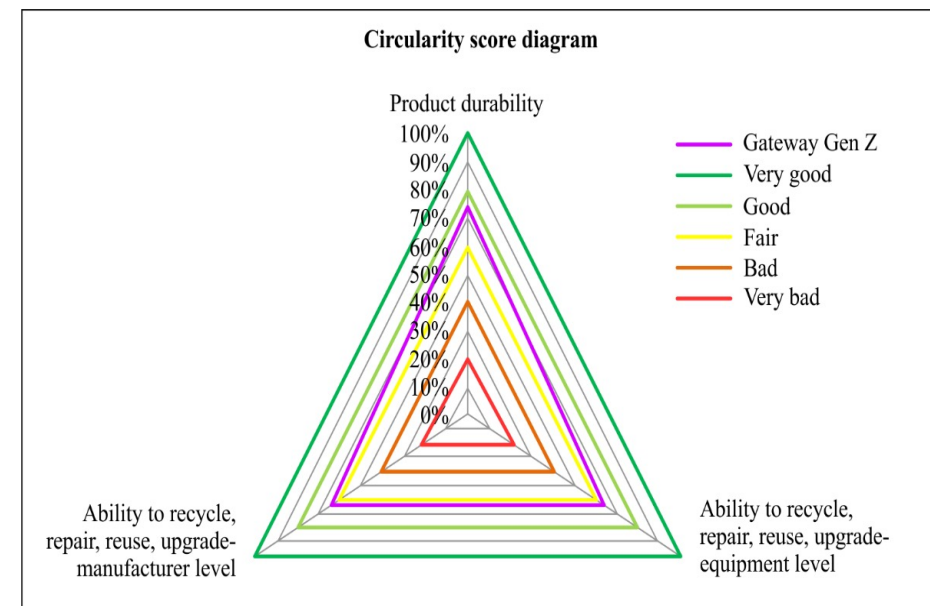
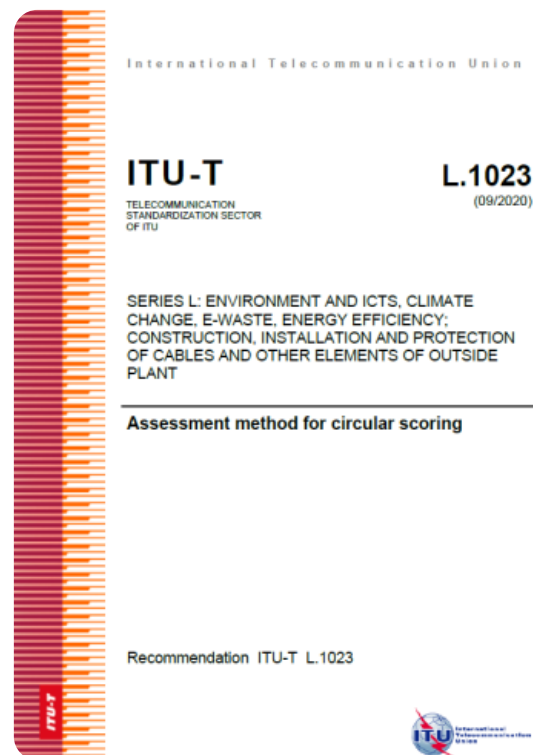
Assessment of Mobile Network Energy Efficiency



Provide a **KPI to measure the efficiency of the entire mobile network**: consider the traffic data volume and the total energy consumption of the network .

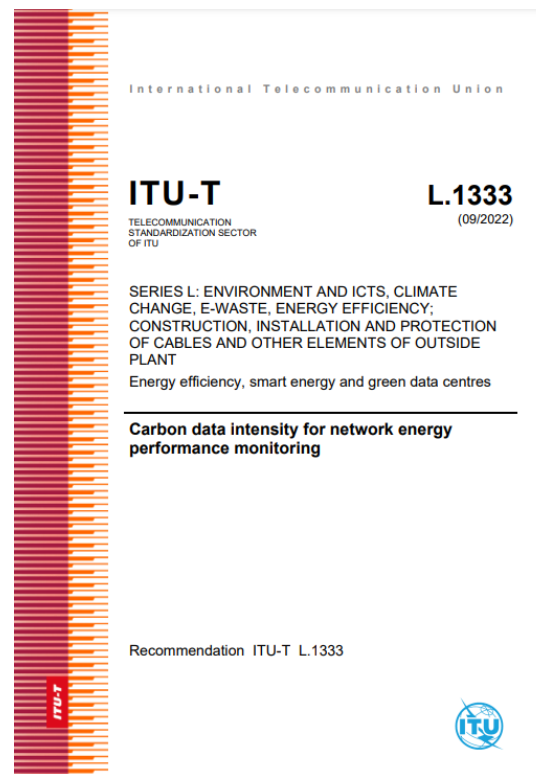
$$EE_{MN,DV} = \frac{DV_{MN}}{EC_{MN}}$$

Assessment product circularity



L.1023(20)_FI.1

Carbon Data Intensity for Network Energy Performance Monitoring



Defines a simple **KPI** to evaluate the **GHG emission performance of a complete network** (composed by fixed, mobile, access network and also enterprise network)

$$NCI_e \left(\frac{kgCO_2e}{TB} \right) = \frac{\text{Total Carbon Emission of network operation}}{\text{Total Data traffic}}$$

ITU-T Standards Driving Sustainable Networks



Circular Design Criteria

Recommendation
ITU-T L.1023



Assessing ICTs GHG Emissions

Recommendation
ITU-T L.1410



Assessing Energy Efficiency of Networks

Recommendation
ITU-T L.1331



Assessing GHG Emissions of Networks

Recommendation
ITU-T L.1333

TRANSITION TO NET ZERO

Sets the trajectories of GHG emissions for the global ICT sector and sub-sector
Recommendation ITU-T L.1470

Thank you!

Questions? Interested in
learning more?
Let us know!

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