

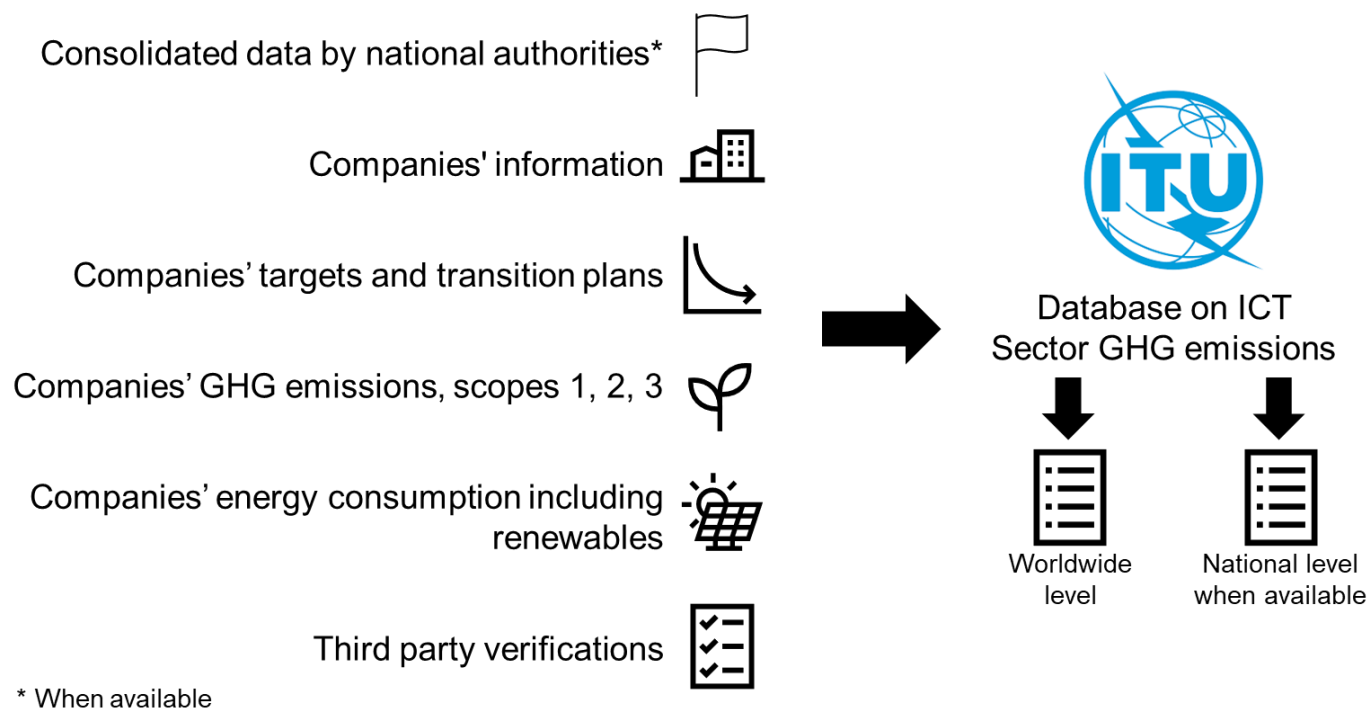
Requirements for the creation of a database on energy consumption and GHG emissions of the ICT sector

Rosendo Manas
ITU Consultant for Pilot Project L.1472



Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector

The draft Recommendation ITU-T L.1472 provides required data entry points for the future ITU database on energy consumption and ICT sector GHG emissions at worldwide and national level.



Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (8/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Fixed broadband (GWh)	Subsector analysis, extrapolation	X					X	X	X	X	(X)		X		Other company data
Data transport / IP core network (GWh)	Subsector analysis, extrapolation	X					X	X	X	X	(X)		X		Other company data
Data centers (GWh)	Subsector analysis, validation, extrapolation	X					X	X	X	X	(X)		X		Other company data
Servers (GWh)	Subsector analysis, validation extrapolation		X				X	X	X	X	(X)		X		Other company data

Some insights

Key result

- Data is available for **70%** of the data points.
- We observe variations ranging from **30% to 90%**, depending on:
 - Company size
 - Location
 - Core business (telecom, data center, software, etc.)

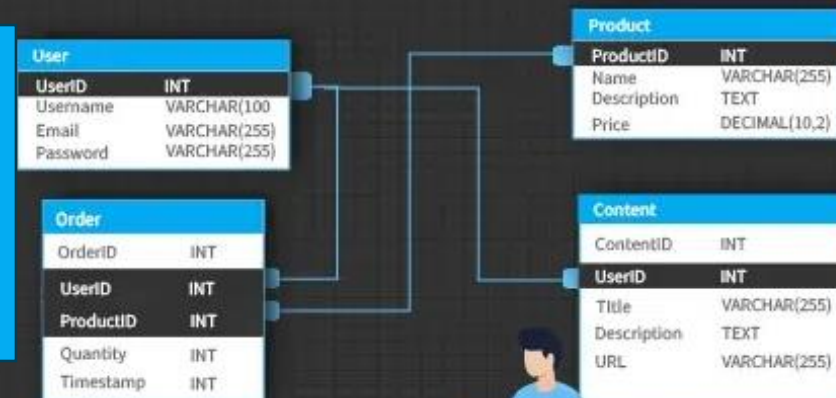
Current participants



Join the pilot project

Implementation of ITU-T L.1472 - Requirements for the creation of a database on energy consumption and GHG emissions of the ICT sector

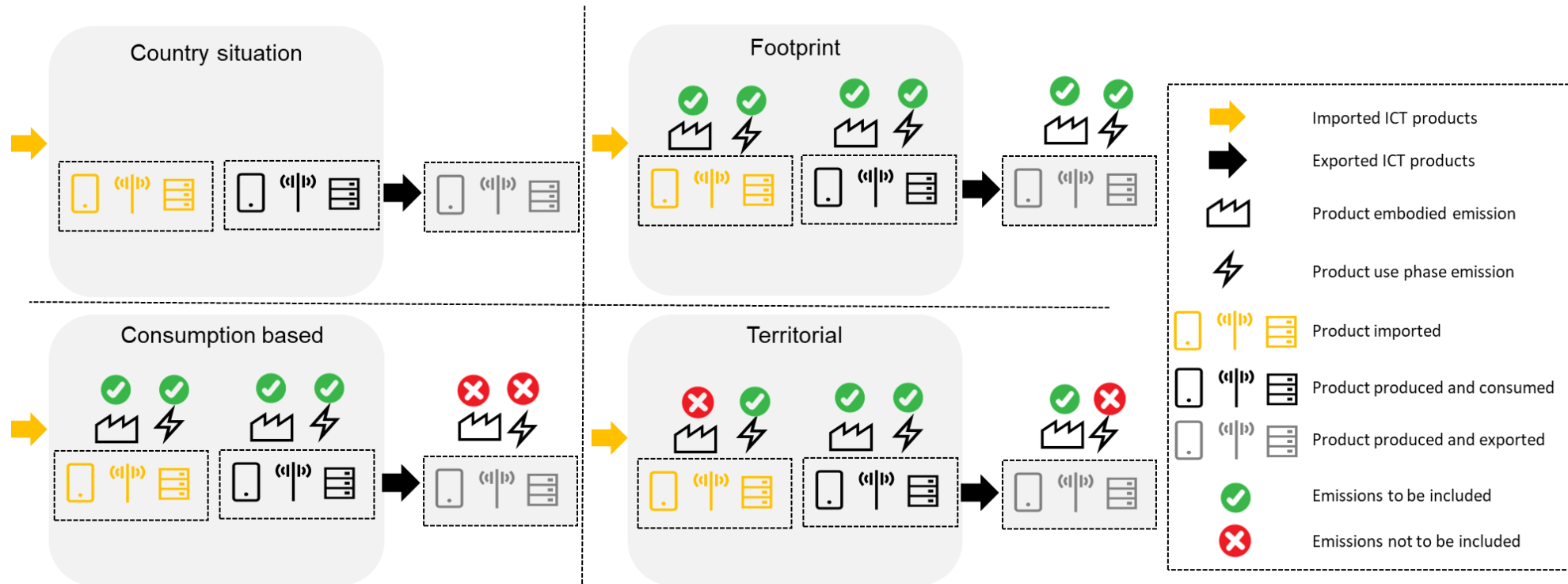
- Play a key role in shaping the future ITU database on GHG emissions and energy consumption.
- Help test the feasibility of collecting the data outlined in ITU-T L.1472.
- Contribute to the ITU standardization process.
- Support the Green Digital Action (GDA) initiative's commitments for Climate Action.



Contact us

environmentalstandards@itu.int

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector: several approaches at country level





Thank you!



Email

tsbsg5@itu.int

environmentalstandards@itu.int



Website

[SG5: Environment, climate
change and circular economy](#)



Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (2/18)

		Who					Type of data			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	Other ICT actors	Worldwide organization footprint	National emissions from the organization when available	Database based on CDP reporting or sector member data collection	Preferred Primary data source
GHG emissions data (kton CO2eq)**										
Scope 1	Basic data	X	X	X	X	X	X	X	X	Public company data*
Scope 2 location based	Basic data	X	X	X	X	X	X	X	X	Public company data *
Scope 2 market based	Basic data	X	X	X	X	X	X	X	X	Public company data *
Scope 2 not specified	Basic data (in absence of specified scope 2)	X	X	X	X	X	X	X	X	Public company data *
Scope 3, per category	Monitoring	X	X	X	X	X	X	X	X	Public company data*
Total GHG emissions	Monitoring/ <i>calculated</i>	X	X	X	X	X	X	X	X	Public company data*
Targets Including short term targets and Net Zero targets	Monitoring	X	X	X	X	X	X	X		Public company data*

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (3/18)

[illegible]

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (4/18)

Second step, deep dive

Table A.2: Data categories, sources and applicability, deep dive

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
GHG emissions data***															
Scope 1 (kton CO ₂ eq)	Basic data	X	X	X	X	X	X		X	X	X	X	X		Public company data*
Scope 2 location based (kton CO ₂ eq)	Basic data	X	X	X	X	X	X		X	X	X	X	X		Public company data*
Scope 2 market based (kton CO ₂ eq)	Basic data	X	X	X	X	X	X		X	X	X	X	X		Public company data*
Scope 2 not specified (kton CO ₂ eq)	Basic data (in absence of	X	X	X	X	X	X		X	X	X	X	X		Public company data*

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (5/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
	specified scope 2)														
Scope 3, per category (kton CO ₂ eq)	Monitoring	X	X	X	X	X	X		X	X	X	X	X		Public company data*
Total GHG emissions (kton CO ₂ eq)	Monitoring/ calculated	X	X	X	X	X	X		X	X	X	X	X		Public company data*
Total electricity data															
Purchased electricity consumption (Gwh)	Basic data	X	X	X	X	X		X					X		Other company data
Own generation, e.g. PV or wind (GWh)	Basic data	X	X	X	X	X		X					X		Other company data

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (6/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Subtracted co-locations (GWh)	Basic data	X	X					X					X		Other company data
Added external co-locations (GWh)	Basic data	X	X					X					X		Other company data
<i>Total electricity consumption (GWh)</i>	<i>Calculated</i>														<i>Calculated</i>
Certified green electricity, per type (GWh)	monitoring, validation, analysis	X	X	X	X	X	X	X	X	X	(X)		X		Other company data
Emission factors for electricity															
Average emission factor, market based (kton CO2 eq/GWh)	monitoring,	X	X	X	X	X	X		X	X	(X)		X		Other company data

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (7/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
	validation, analysis														
Average emission factor, location based (kton CO ₂ eq/GWh)	monitoring, validation, analysis	X	X	X	X	X	X		X	X	(X)		X		Other company data
Detailed electricity data															
PSTN + VoIP (Fixed voice) (GWh)	Subsector analysis, extrapolation	X					X	X	X	X	(X)		X		Other company data
Mobile access + Mobile core (GWh)	Subsector analysis, extrapolation	X					X	X	X	X	(X)		X		Other company data

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (9/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Diesel consumption															
Diesel used at sites, off-grid/back-up (m3)	monitoring, validation, analysis, extrapolation	X	X				X		X	X	(X)		X		Other company data
Applied Diesel emission factor (ton CO2/m3)	monitoring, validation, analysis, extrapolation	X	X				X		X	X	(X)		X		Other company data
Total Diesel CO2 emissions (kton)	monitoring, validation, analysis, extrapolation	X	X				X		X	X	(X)		X		Other company data

[Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector \(10/18\)](#)

[illegible]

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (11/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emission	Database based on sector member data collection	Other data collection	Primary data source
PSTN subscriptions (classic voice calls)	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
VoIP subscriptions (IP voice calls)	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
Mobile subscriptions (Data and voice)	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
Mobile subscriptions (Data only - No voice)	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (12/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
M2M subscriptions	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
Fixed broadband subscriptions	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
IPTV subscriptions	Subsector analysis, validation, extrapolation, intensities	X					X	X	X	X	(X)	X	X		Other company data (or national data if applicable)
Total data traffic**	Subsector analysis, validation, intensities analysis,	X					X	X	X	X	(X)		X		Other company data
Data traffic, fixed subscriptions**	Subsector analysis, validation, intensities analysis,	X					X	X	X	X	(X)		X		Other company data

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (13/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Data traffic, mobile subscriptions**	Subsector analysis, validation, intensities	X					X	X	X	X	(X)		X		Other company data
Data traffic, other**	Subsector analysis, validation, intensities	X					X	X	X	X	(X)		X		Other company data
Mobile business share of revenue	Subsector analysis, validation, intensities	X					X	X	X	X	(X)		X		Other company data
Mobile business share of employees	Subsector analysis, validation, intensities	X					X	X	X	X	(X)		X		Other company data
Racks (#)	Subsector analysis, validation, intensities		X				X	X	X	X	(X)		X		Other company data
Servers (#)	Subsector analysis, validation, extrapolation, intensities		X				X	X	X	X	(X)		X		Other company data

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (14/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Ports (#)	Subsector analysis, validation, extrapolation, intensities		X				X	X	X	X	(X)		x		Other company data
Storage capacity (TB)	Subsector analysis, validation, intensities		X				X	X	X	X	(X)		x		Other company data
Area (total) (m2)	Subsector analysis, validation, intensities		X				X	X	X	X	(X)		x		Other company data
Area (for ICT equipment) (m2)	Subsector analysis, validation, intensities		X				X	X	X	X	(X)		x		Other company data
Use of materials															
Use of materials for goods, networks and services	Basic data						X		X	X				Materials studies	Research studies

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (15/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Embodied emissions (production processes)		-													
Embodied emissions of end-user goods, PCF studies	Basic data				X		X		X	X				PCF	Public company data
Embodied emissions of end-user goods, LCA studies	Basic data						X		X	X				LCA	Research studies
Scope 1-2 emissions of end-user goods provider - see above	Basic data				X		X		X	X	X	X	X		Public company data*
Scope 1-2 emissions of end-user goods supplier- see above: - Semiconductor manufacturer & outsources semiconductor assembly and testing - Printed circuit board manufacturers - Display manufacturers - Electronics Manufacturing services providers (OEM, ODM) - Other electronics component manufacturers - Mechanics and electro-mechanics manufacturers	Basic data					X	X		X	X	X	X	X		Public company data*

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (16/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Use of end user goods															
Use of end-user goods	Basic data				X		X	X	X	X	X		X	X	Various sources including user studies, usage profiles and electricity
Shipments															
Sales volumes of end-user goods for measurement period	Basic data						X	X	X	X				X	industry analysts
Sales volumes of end-user goods per year of life time (installed base)	Basic data						X	X	X	X				X	industry analysts
Life time															
Operating life time, per good type	Basic data	X	X	X	X		X		X	X			X	X	Various sources including company data and research studies

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (17/18)

Data type	Purpose	Who					Type of calculation					Data source type			
		Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Use of end user goods															
Use of end-user goods	Basic data				X		X	X	X	X	X		X	X	Various sources including user studies, usage profiles and electricity
Shipments															
Sales volumes of end-user goods for measurement period	Basic data						X	X	X	X				X	industry analysts
Sales volumes of end-user goods per year of life time (installed base)	Basic data						X	X	X	X				X	industry analysts
Life time															
Operating life time, per good type	Basic data	X	X	X	X		X		X	X			X	X	Various sources including company data and research studies

Draft Recommendation ITU-T L.1472 - Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector (18/18)

		Who					Type of calculation					Data source type			
Data type	Purpose	Telecom operator	Data center operators	Network goods provider	End-user goods provider	ICT supplier	Global ICT sector footprint	Global ICT sector electricity consumption	National ICT emissions (footprint perspective)	National ICT emissions (consumption perspective)	National ICT emissions (territorial perspective)	Database based on country level data collection for territory emissions	Database based on sector member data collection	Other data collection	Primary data source
Verification and data validation															
Third-party verification of scope 1 (yes/no and by whom) and verification boundaries	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			
Third-party verification of scope 2 (yes/no and by whom) and verification boundaries	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			
Third-party verification of scope 3 (yes/no and by whom) and verification boundaries	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			
Third-party verification of energy consumption data (yes/no and by/whom) and verification boundaries	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			
Level of assurance delivered by third-party verifier/auditor (limited/reasonable) for energy consumption	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			
Level of assurance delivered by third-party verifier/auditor (limited/reasonable) for carbon reporting	validation	X	X	X	X	X	X	X	X	X	X	Public company data*			