



**ETSI TS 103 199 V1.1.1 “Life Cycle Assessment (LCA) of
ICT equipment, networks and services: General
methodology and common requirements**

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Date: 20 September 2012

Introduction to TS 103 199



- TS 103 199 V1.1.1 “Life Cycle Assessment of ICT equipment, ICT network and service: General definition and common requirement”
- Published on November 2011
- Cooperation with ITU-T SG5 was in place during the drafting stage
- The purpose of this TS is to harmonize the LCA of ICT:
 - Equipment
 - Networks
 - Services
- It includes specific requirements for LCA of ICTs in respect to:
 - ISO 14040 Environmental management, Life cycle assessment, Principles and framework
 - ISO 14044 Environmental management, Life cycle assessment, Requirements and guidelines
 - International Reference Life Cycle Data System (ILCD) Handbook - General guide for Life Cycle Assessment
- The TS 103 199 can be downloaded at:

http://www.etsi.org/deliver/etsi_ts/103100_103199/103199/01.01.01_60/ts_103199v010101p.pdf

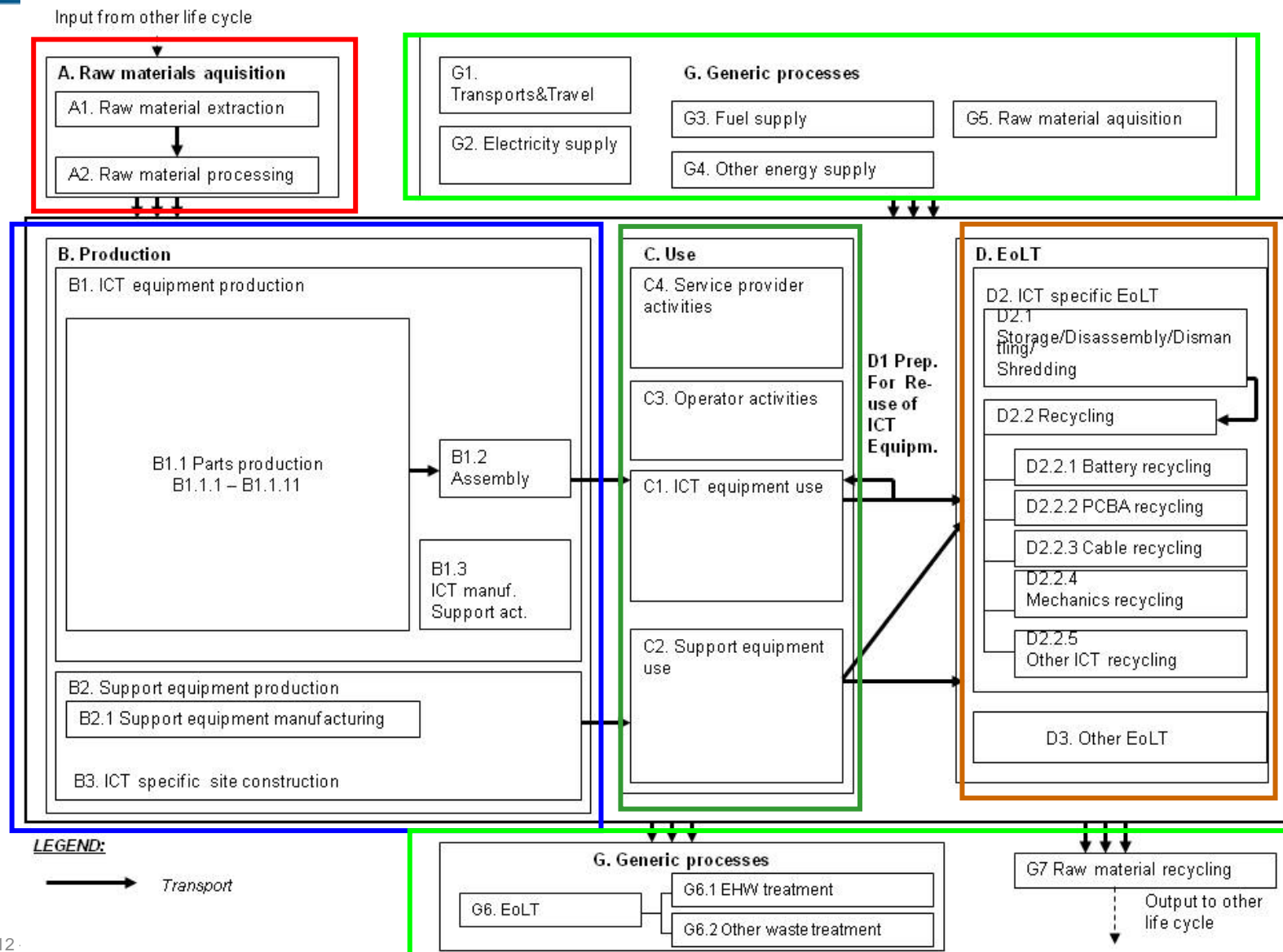
Features of TS 103 199



- Lifecycle stages clearly defined for ICT equipment, network and services (clause 5.1.1)
 - Lifetime is defined as: “Operating lifetime: duration of the actual use period (consisting of both active and non-active periods) for the first user. Storage time is not included in operating lifetime”
- Functional units (clause 5.2.1):
 - Annual ICT Equipment use or Total ICT Equipment use per lifetime of ICT Equipment
 - Annual Network use
 - Annual Service use
- System boundaries (clause 5.2.2): Life Cycle Stages and Unit Processes Identified and Classified as Mandatory, Recommended or Optional
 - The level of detail is quite high to provide good guidance to users
- Rules for Cut-off, if they cannot be avoided, are clearly defined (clause 5.2.3)

- Data quality evaluation: Qualitative requirements defined for all life cycle stages and unit processes (clause 5.2.4)
- Allocation methods: provided for all processes (clause 5.3.3):
 - generic processes
 - support activities between projects/product systems
 - facility data
 - transports
 - recycling
- Detailed reporting instructions (diagrams, tables) (clause 6)
 - This is to facilitate report review

Life cycle stages overview



How to improve TS 103 199



- TS 103 199 has been evaluated during the European Commission pilot test
- During the pilot test, some questions have been raised that allowed to identify the strengths and weaknesses of the ETSI LCA document
- The identified weaknesses will be addressed by ETSI TC-EE to improve the TS 103 199

What we consider “strengths” of TS 103 199



Strengths

- Strict requirements to avoid less spread of outcomes
- Solution to:
 - Inconsistent result presentations of ICT LCAs
 - Lack of transparency in ICT LCAs
 - Lack of credibility of ICT LCAs.

Weaknesses identified in the TS 103 199



Weaknesses (1/3)

- Not exhaustive in requirements and guidance on Service LCA
- Not enough strict requirements on databases, emission factors, use stage power measurement to allow external comparisons of LCA studies
- Time consuming and less workable for Networks and Services compared to GHG Protocol ICT
 - TS 103 199 requires to fully apply the LCA method for the ICT Equipment of which the Networks are built.
 - GHG P ICT allows approximation for the ICT Equipment if the precision of the total (CO₂e) score is not significantly changed
 - Therefore GHG P ICT becomes less bureaucratic and more workable

Weaknesses identified in the TS 103 199



Weaknesses (2/3)

- Full compliance to ETSI TS 103 199 for Network and Service LCAs seems very challenging
 - LCAs for ICT Equipment which are compliant to TS 103 199 are few.
 - According to ETSI TS the user has to carry out the “cradle-to-gate” (RMA + Production + Assembly) analyses for all ICT Equipment contained in the Network/Service
 - It is tough to quickly make an ETSI TS 103 199 compliant Network LCA. It will however be possible over time when LCA of ICT equipment are assessed according to the ETSI TS
- Pilots not comfortable with public policy on LCA of Services based on ETSI due to
 - the workload seemingly induced by the strict reporting requirements of ETSI
 - the comparability issue.

Weaknesses identified in the TS 103 199



Weaknesses (3/3)

- To excessive reporting requirements for Services
- Prescribed system boundaries do not reflect “software products”
- Tends to be over-engineered
- Too few “HOW TO” descriptions in the Examples in Annex O.
- Could be difficult to understand for non LCA specialists

Improvements to be addressed in the TS 103 199



- Allocation rules for recycling (**sub-clause 5.3.3.1.5**) needs more explanations/clarifications
- More guidance is required for the sensitivity analysis (**sub-clause 5.5.3**)
- Clarifications on how to assess the LCA uncertainty (**Annex K**).
- **Annex O**: Examples should include the mechanism of software and hardware upgrading which happens during the life cycle and corresponding calculation guidance on how to be compliant
- More guidances to be provided in:
 - **Annex O.4**: Network: improve guidelines on estimation techniques
 - **Annex O.5**: Services: improve guidelines on estimation techniques
 - **Annex O.5**: Handling of Software needs extended description and requirement
- Distinguish between record keeping and external reporting (**clause 6**)
- Clarify applicability of annexes when only GHG emissions are assessed

Improvements to be addressed in the TS 103 199, sub-clause 5.3.3.1.5



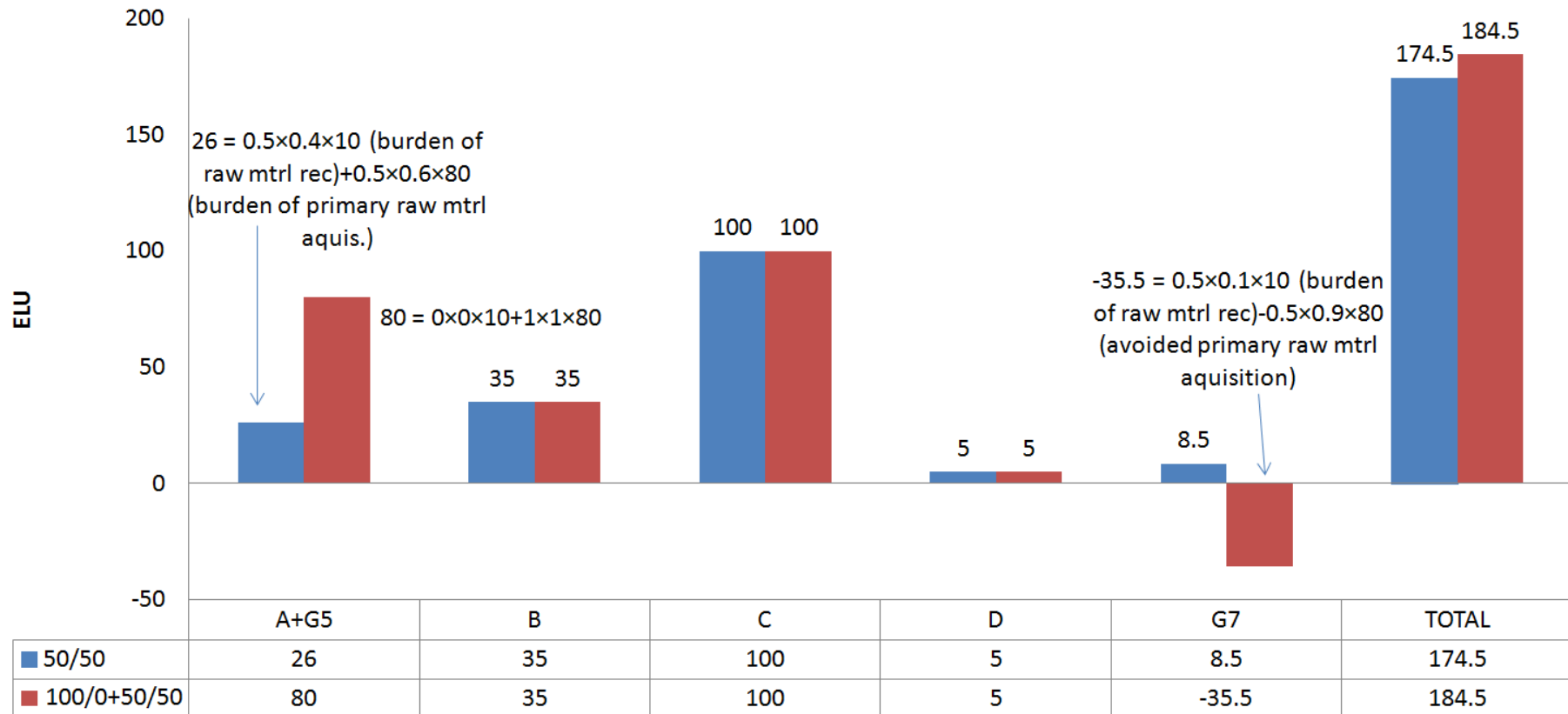
- Allocation rules for recycling needs more explanations:
 - provide better guidelines to CLEARLY select recycling allocations (0/100 method, 100/0 method, 50/50 method)
- Update Annex N and Annex O with better examples and explanations
- Especially Fig. N.2 is currently not precise for raw material recycling as the formulae used for 100/0 + 50/50 would give erroneous results for other recycled content (than 40%) and other material recovery efficiency (90%).
 - I.e. , results for 100/0+50/50 would be unreasonable and much different, using same values e.g. 5% recycled content and 75% material recovery efficiency (but different values than 40% and 90% respectively) in the Example used i Fig N.2.

Improvements to be addressed in the TS 103 199, sub-clause 5.3.3.1.5



Suggestion for an update of Fig. N.2.

50/50 and 100/0+50/50 methods (90% mtrl rec eff and 40% rec. mtrl content)



Improvements to be addressed in the TS 103 199, Reporting – Generic processes



- In "transport process" (G1), the chargeable weight has to be clarified and exemplified (sub-clause 5.3.3.1.4)
- In "Electricity process" (G2), it needs to clarify "all" kinds of electricity production used in ICT

Table A.1: Generic processes for LCA of ICT equipment

Generic process	Generic process categories	Unit processes (for each category)	Product flow unit	Important issues
G1. Transport and Travel	Road Air Ship Train	Mandatory: Direct (during transport) emissions Fuel supply chain (see note) Optional Vehicle production Infrastructure production	ton×km, kg×km, Cton×km	Chargeable weight = Cton×km (function that also considers volume or density)
G2. Electricity	National, regional and producer electricity mixes	Mandatory: Fuel supply chain(see note), Direct emissions (during electricity production) Optional: power plant production, dam production, the grid production, nuclear waste treatment	kWh	This is not applicable to local production of electricity
	Oil			
G3. Fuels	Diesel Petrol Jet-fuel LPG LNG Coal Gas	Mandatory: Fuel supply chain (see note)	mass, volume, energy content	

Improvements to be addressed in the TS 103 199, Reporting format for Parts production



- In the reporting format it needs to clarify the data quality requirements on black box modules LCAs compared to the “main” ICT Equipment

Table F.6: Reporting format for parts production

	Part categories included	Part Unit processes included	Handling of special issues
B1.1.1 Batteries			
B1.1.2 Cables			
B1.1.3 Electro-mechanics			
B1.1.4 Integrated circuits (ICs)			
B1.1.5 Mechanics / materials			
B1.1.6 Displays			
B1.1.7 Printed circuit boards (PCBs)			
B1.1.8 Other PBA components			
B1.1.9 Packaging materials			
B1.1.10 Black box modules			

- ETSI TS 103 199 provides:
 - detailed methods for ICT LCAs with transparent and detailed reporting (for all three ICT categories: equipment, network and services)
 - clear guidances of what to consider in terms of requirements, allocation of recycled material, harmonization of result presentation and cut-off rules
- The improvements identified in the pilot assessments are well understood
- The update of the examples in Annex O will improve the understanding of ETSI LCA for ICTs
- The New Work Item to improve ETSI TS 103 199 will be discussed and adopted at the next ETSI TC-EE meeting (24-28 September 2012)
- **Any further suggestion for improvements is welcome**

THANK YOU



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Backup slides

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