

ICT Carbon Footprint Tool

Measure – Analyze – Act

Fredrik Eriksson,
ICT Strategy Officer

+46 13 26 33 53
fredrik.c.eriksson@linkoping.se



The Carbon Footprint Tool

- A method to measure ICT equipments energy usage and calculate:
 - KWh
 - Costs
 - CO₂ emissions
- The method and tool was developed 2013

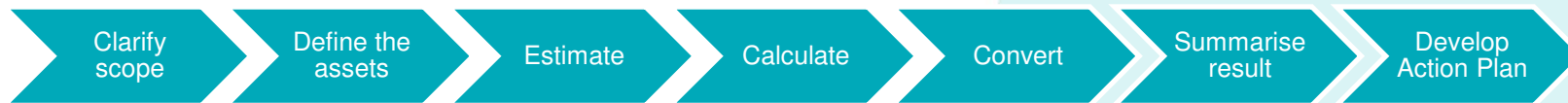




Linköping
CO₂
neutralt
2025

The overall
objective

ICT Carbon Footprint tool: Step-by-step

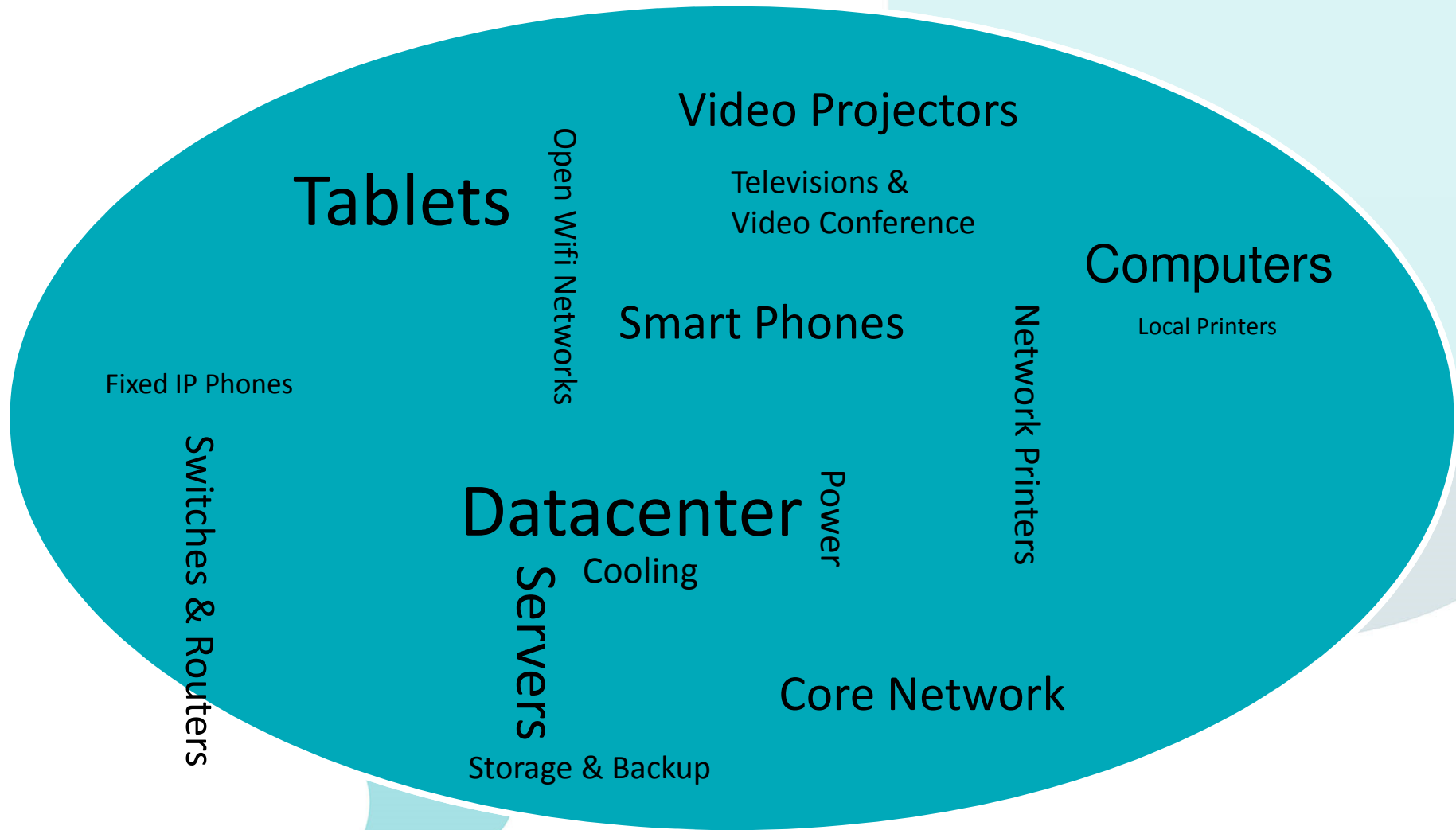


1. Clarify organisational scope
2. Define ICT assets
3. Estimate number of assets according to type
4. Calculate energy usage from estimation
5. Convert energy usage to carbon emissions data
6. Summarise results
7. Develop action plan to reduce emissions

The Scope

- All ICT-equipment delivered by the ICT Department
 - Both the municipality and the municipal companies included
- The Datacenter(s)
- Private or non-standard equipment partly included
 - Connected to the open **WiFi**® network(s)

Assets



Linköping
Where ideas come to life

Measurement methods and tools

- Manual measurements + the asset register
 - 'Up time' estimated
 - Lessons learned - vendor energy consumption data not reliable
- All IP-based equipment measured using a custom application
 - Gathers information from network switches and stores in a database
 - Counts number of units and up time per connected unit
- Datacenter is measured separately – we just look at the bill 😊
 - 100 % green – water powered



Results 2008, 2013 and 2015

2008

- Scope:
 - Only computers and print paper consumption (**6 000 units**)
- Purpose:
 - To investigate effects of automatically turn off the computers during non-working hours (50 % on 24/7)
 - To implement double-sided printing as standard
- Conclusion:
 - By automatically turning off all the computers during non-working hours we saved 270 tonnes CO₂ and € 270 000 per year
 - Small positive effects of implementing double-sided printing as standard



Linköping
Where ideas come to life

2013

- Scope:
 - Datacenter(s), core network, computers, network printers & copiers (MFP:s) fixed phones (**11 800 user units**)
- Purpose:
 - To develop a new method to measure the ICT energy consumption and calculate costs and CO₂ emission – the ICT Carbon Footprint Tool
- Conclusion:
 - Although the scope (equipment) has expanded and the number of computers nearly doubled, compared to 2008, ICT:s total energy consumption has not increased
 - The equipment is more energy efficient + better “sleep” functions

2015

- Scope:

- Datacenter(s), core network, local network, video projectors, television & video conference systems, network printers & copiers (MFP:s), fixed phones, mobile/smart phones, tablets and computers, open wifi network, private equipment (**43 000 user units**)

- Purpose:

- To get knowledge about the current situation and compare with previous measurement 2013

- Conclusion:

- The total energy usage increased with 30 % and the energy cost almost doubled due to the expanded scope (units x 4)
- But, the CO₂ emissions has decreased with 5 % (to 30 %) due to the use of green energy sources for the Datacenter(s)
- Also good to know - new or modified tools need to be used over time

Summary

ICT investments are user driven – we monitor the environmental effects of these