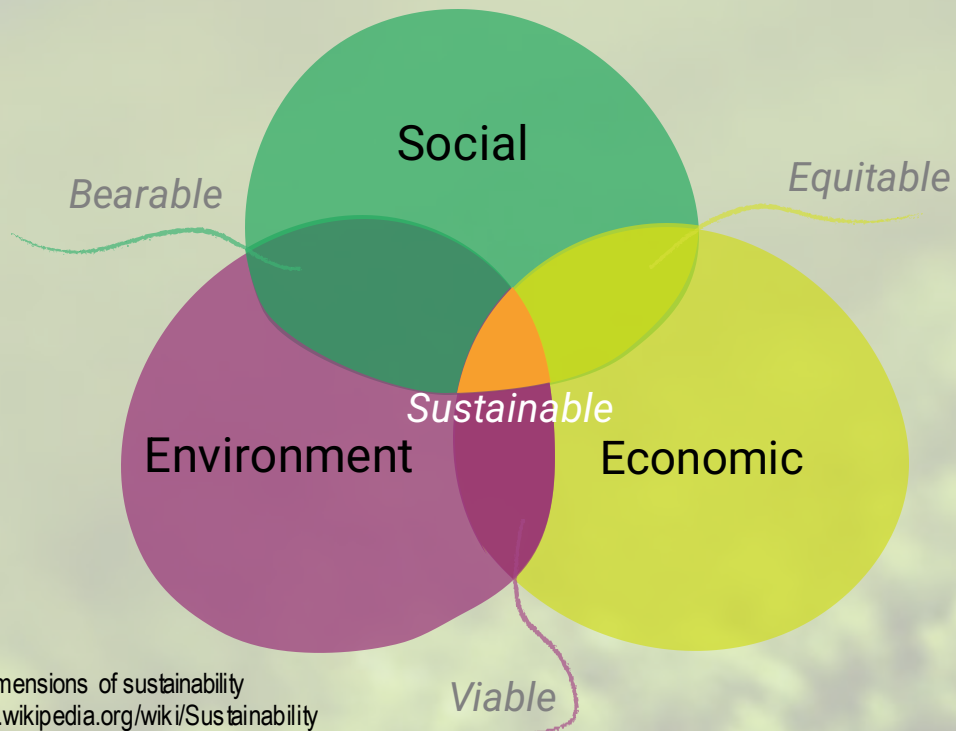# Digital Product Passport Link to Circular Economy and Digital Transformation of (ICT) Products
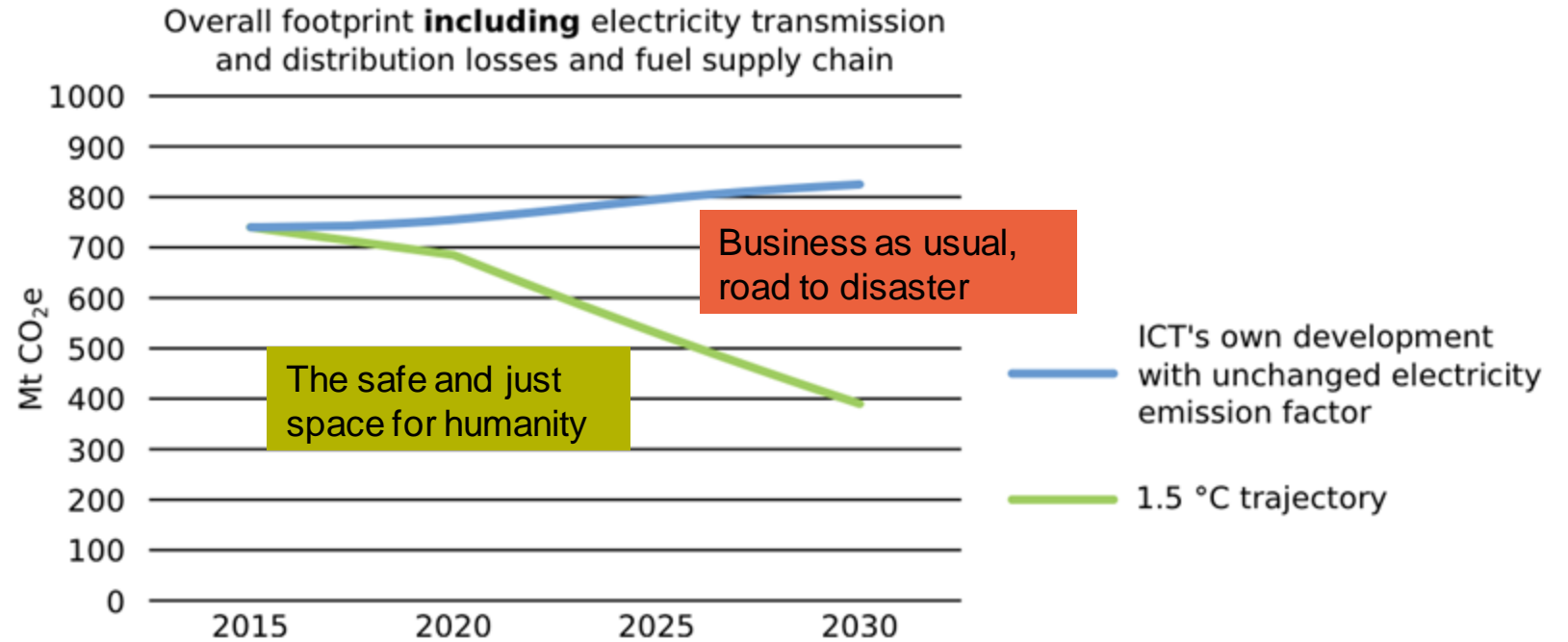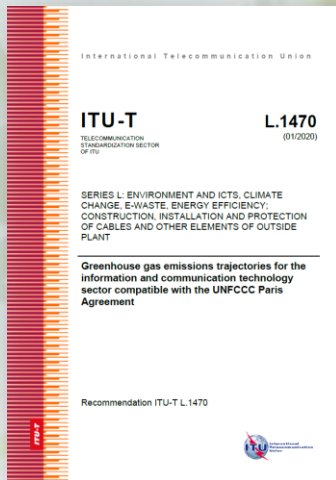
Leandro Navarro
Co-rapporteur Q7/5
ITU

Setting the Framework for Sustainability

Three dimensions of sustainability
https://en.wikipedia.org/wiki/Sustainability

Doughnut economics
https://en.wikipedia.org/wiki/Doughnut_(economic_model)

The Challenge to Reach Net Zero Trajectories 2030

ITU-T   **L.1470**
(01/2020)

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

SERIES L: ENVIRONMENT AND ICTS, CLIMATE
CHANGE, E-WASTE, ENERGY EFFICIENCY;
CONSTRUCTION, INSTALLATION AND PROTECTION
OF CABLES AND OTHER ELEMENTS OF OUTSIDE
PLANT

Greenhouse gas emissions trajectories for the
information and communication technology
sector compatible with the UNFCCC Paris
Agreement

Recommendation ITU-T L.1470

Overall footprint **including** electricity transmission
and distribution losses and fuel supply chain

Business as usual,
road to disaster

The safe and just
space for humanity

ICT's own development
with unchanged electricity
emission factor

1.5 °C trajectory

Mt CO_2e

1000
900
800
700
600
500
400
300
200
100
0

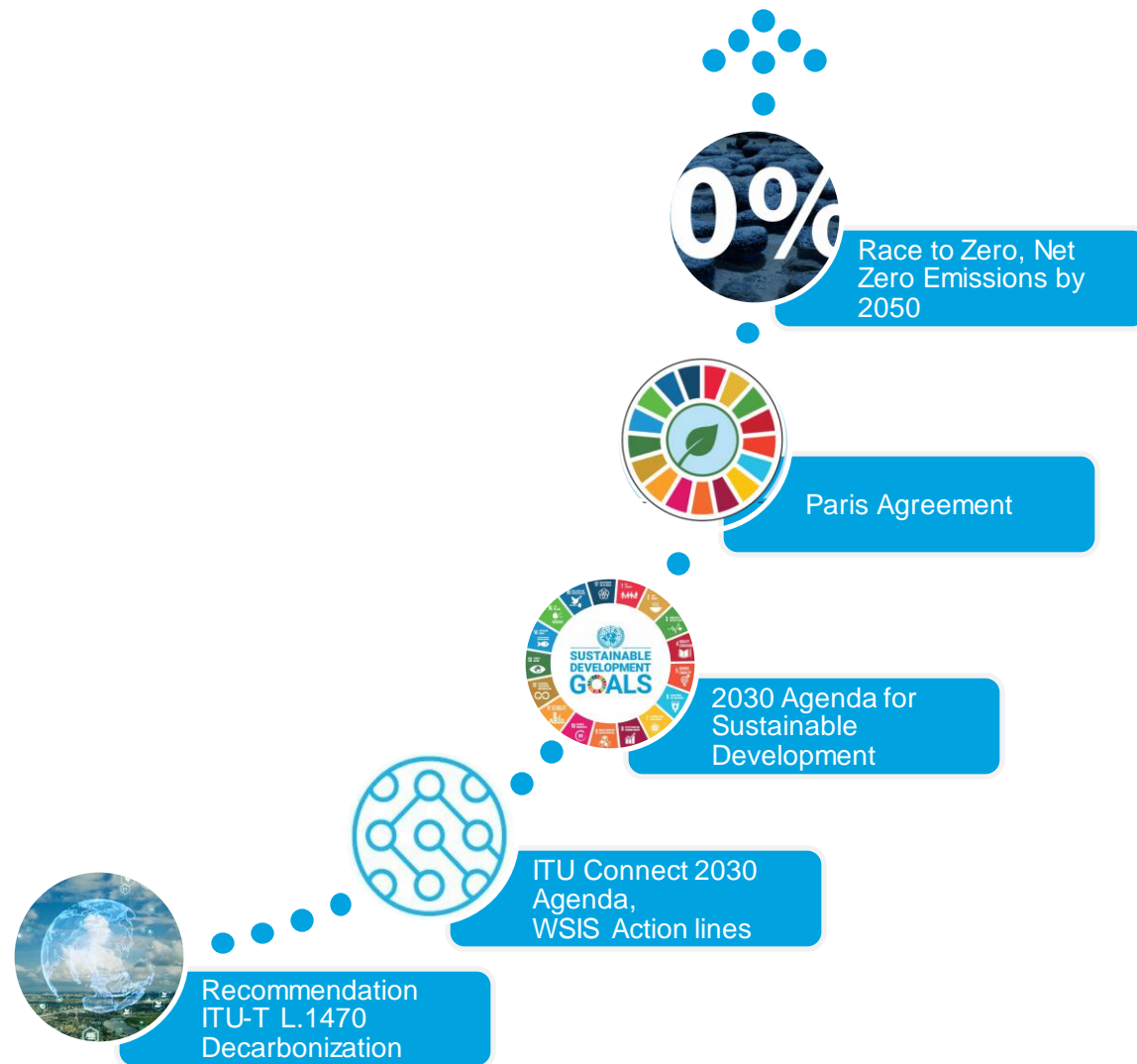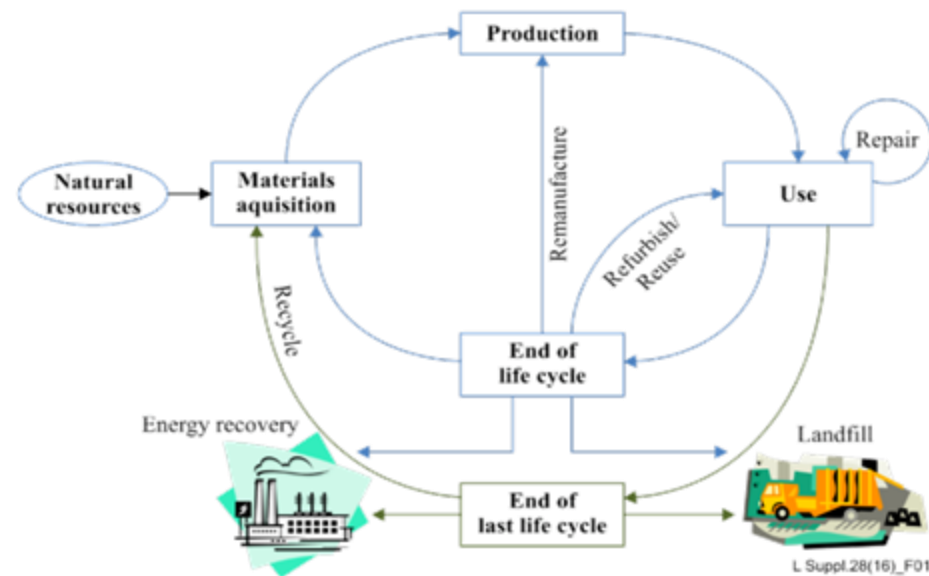2015   2020   2025   2030

Scenario for the ICT Sector

APPLICATION OF THE CIRCULAR ECONOMY PRINCIPLES
12. Eco-design of products and services
13. Reuse of network equipment
14. Optimizing the life cycle and end-of-life of customer products and services
15. Selling repairable products

L.1471(21)

Race to Zero, Net Zero Emissions by 2050

Paris Agreement

2030 Agenda for Sustainable Development

ITU Connect 2030 Agenda, WSIS Action lines

Recommendation ITU-T L.1470 Decarbonization

Circular Economy

L Suppl.28(16)_F01

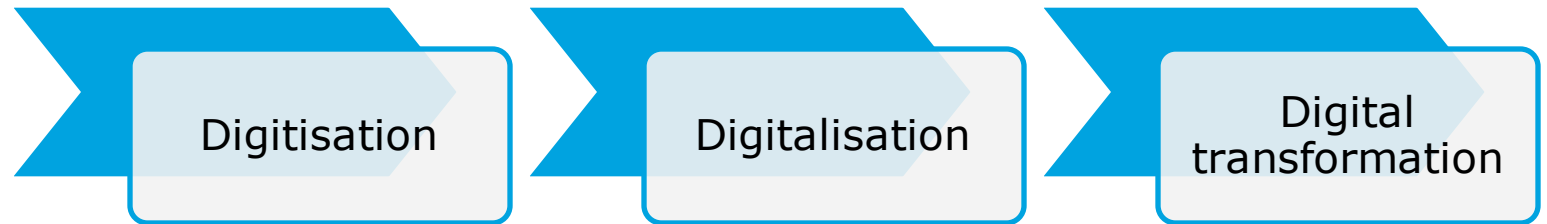|	
Eco-design of products and services	Reuse
Optimising life cycle and end-of-life	Selling repairable products
e-waste	*Knowing helps digital information about products*

Digitalisation and Products

Digitisation → Digitalisation → Digital transformation

- Related Standards: material datasheets, databases, data carriers, storage, technical data interop protocols, etc.
- Digital transformation concerns most if not all product categories: EEE, ICT, but also plastics, textile, vehicles, buildings, etc.

International Telecommunication Union

ITU-T Study Group 5: EMF, environment, climate action, sustainable digitalization and circular economy, develops standards on:

- Electromagnetic compatibility, resistibility and lightning protection
- Soft error caused by particle radiations
- Human exposure to electromagnetic fields
- Circular economy and e-waste management
- ICTs related to the environment, energy efficiency, clean energy and sustainable digitalization for climate actions

Focus Group on Environmental Efficiency for AI and other Emerging Technologies (FG-AI4EE)

Setting the Environmental Standards of 5G

Strengthening the achievements of the Connect 2030 Agenda

ITU-T Standard Under Development

Requirements of reporting key aspects related to circularity and transparency of an ICT or digital technology product in digital format

Facilitate and automate comparison of different ICT products based on circularity aspects

Facilitate preparation and reuse in the second-hand market and the reverse supply chain

Help manufacturers, governments, users to implement voluntary reporting and monitoring mechanisms to assess these qualities

PASSPORT

Digital Product Passport Framework

- A structured collection of product-related data

- with predefined scope and agreed data ownership and access rights

- conveyed through a unique identifier

- including details of all stages, ranging from raw materials to e-waste

- Also called: product data sheets, metadata twin

The Digital Product Passport Examples

A unique product identifier:

- product, batch, item, part

Data carrier:

- scan code in the product

Details:

- Codes, compliance, economic operators
- Env. performance: materials, energy, weight, durability
- Info for buyers and end-users (maintenance, repair, parts), treatment (end-of-life), operators (handling), market surveillance, customs

The Digital Product Passport contributions

More sustainable, circular products
- design, reuse

Traceability, transparency, verifiability
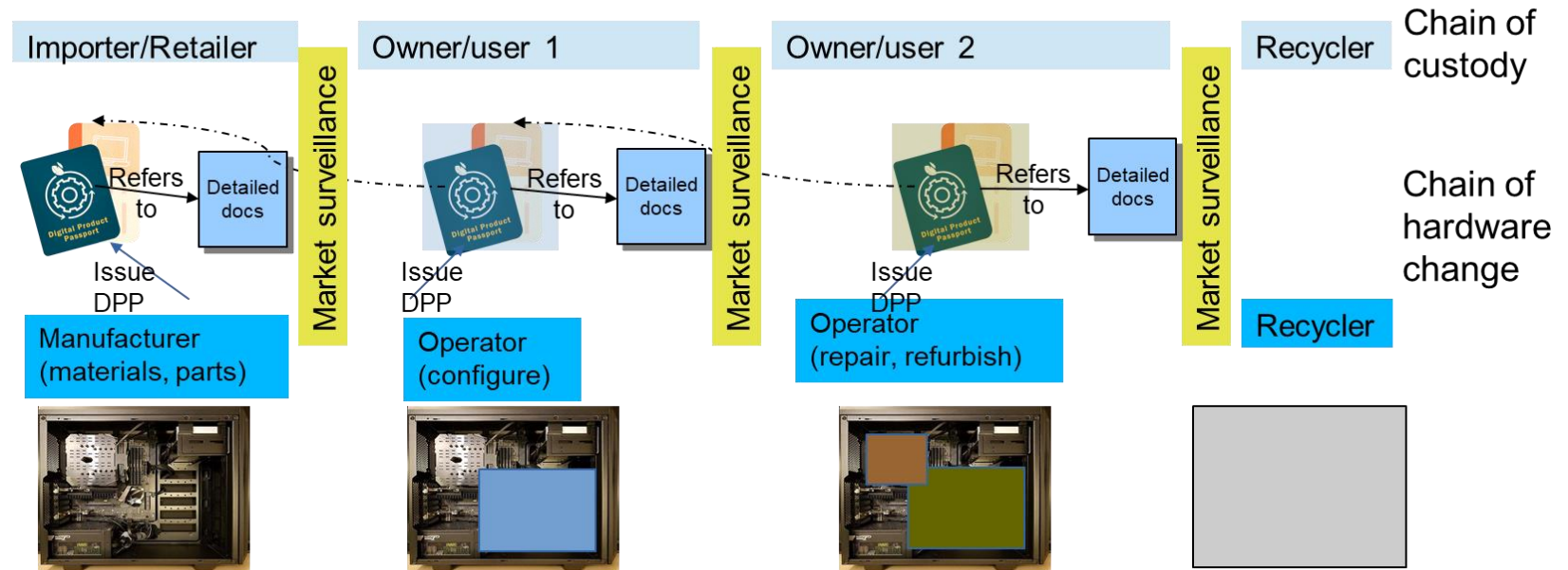- accountability

Informed choice & incentive
- procurement, EPR, reuse, return, recycling

Digital Product Pathway

- Devices can be upgraded, reconfigured, repaired replacing parts:
  - Serialised, one chassis for life
  - Different hardware parts
  - What a recycler sees in an end-of-life product may be very different from the first product

Digital/ICT devices

Proof-of-Concept DPP Prototype

A working digital product passport for:
Chassis: a305d06175
Detailed hardware ID: ab0f5fab03

This is the info for Digital Passport:
a305d06175:ab0f5fab03

Hardware

- Device
  - Chassis: Tower
  - Manufacturer: Dell Inc.
  - Model: Optiplex 790
  - SerialNumber: 13SSB5J
  - Sku:
  - Type: Desktop
  - Version: 01
- Components
  - {'type': 'GraphicCard', 'model': '2nd Generation Core Processor Family Integrated Graphics Controller', 'manufacturer': 'Intel Corporation'}
  - {'type': 'Motherboard', 'model': '0j3c2f', 'manufacturer': 'Dell Inc.', 'serialNumber': '/13SSB5J/CN7360422H02JU/', 'version': 'A21', 'slots': 4, 'usb': 2, 'firewire': 0, 'serial': 1, 'pcmcia': 0, 'biosDate': '2018-02-11T23:00:00.000Z', 'ramSlots': 4, 'ramMaxSize': 32}
  - {'type': 'NetworkAdapter', 'model': '82579lm Gigabit Network Connection', 'manufacturer': 'Intel Corporation', 'serialNumber': 'D4:BE:D9:A2:12:86', 'variant': '04', 'speed': 1000, 'wireless': False}
  - {'type': 'Processor', 'model': 'Intel Celeron Cpu G530 @ 2.40ghz', 'manufacturer': 'Intel Corp.', 'brand': 'Celeron', 'speed': 1.677685, 'cores': 2, 'threads': 2, 'address': 64}
  - {'type': 'RamModule', 'model': 'Hmt351u6cfr8c-H9', 'manufacturer': 'Hynix/hyundai', 'serialNumber': '157AAB3C', 'size': 4096, 'speed': 1067, 'interface': 'DDR3', 'format': 'DIMM'}
  - {'type': 'RamModule', 'model': 'Ct51264bd160bj.c8f', 'manufacturer': '859b', 'serialNumber': 'E2555565', 'size': 4096, 'speed': 1067, 'interface': 'DDR3', 'format': 'DIMM'}
  - {'type': 'SolidStateDrive', 'model': 'Ct240bx500ssd1', 'serialNumber': '1927E18B23E1', 'variant': 'R013', 'size': 240057.409536, 'interface': 'ATA'}
  - {'type': 'SoundCard', 'model': '6 Series/c200 Series Chipset Family High Definition Audio Controller', 'manufacturer': 'Intel Corporation'}

DPP Benefits

Help **integrate existing and new data**	Facilitate **interoperability** and knowledge generation	**Reduce paperwork** and burden
Improve **Accessibility**	Enable **Automation**	**Compliance,** more efficient monitoring and enforcement
Access to relevant and verified product information	**Creating awareness** for a positive attitude to **circularity**	Enabling more **sustainable business models**
	Promote, accelerate, ensure, **environmental efficiency**	

Thank you!

Questions? Interested in learning more?
Let us know!

Email

Website

[tsbsg5@itu.int]

[www.itu.int/climate]