Sustainable Batteries

The building blocks of a circular economy

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From Electrification to Digital Connectivity

From the growing number of electric vehicles and fast-approaching driverless revolution, to the expanding network of smart devices connected via the Internet of Things, digital innovation is touching our lives in almost every direction.

Electric Vehicles

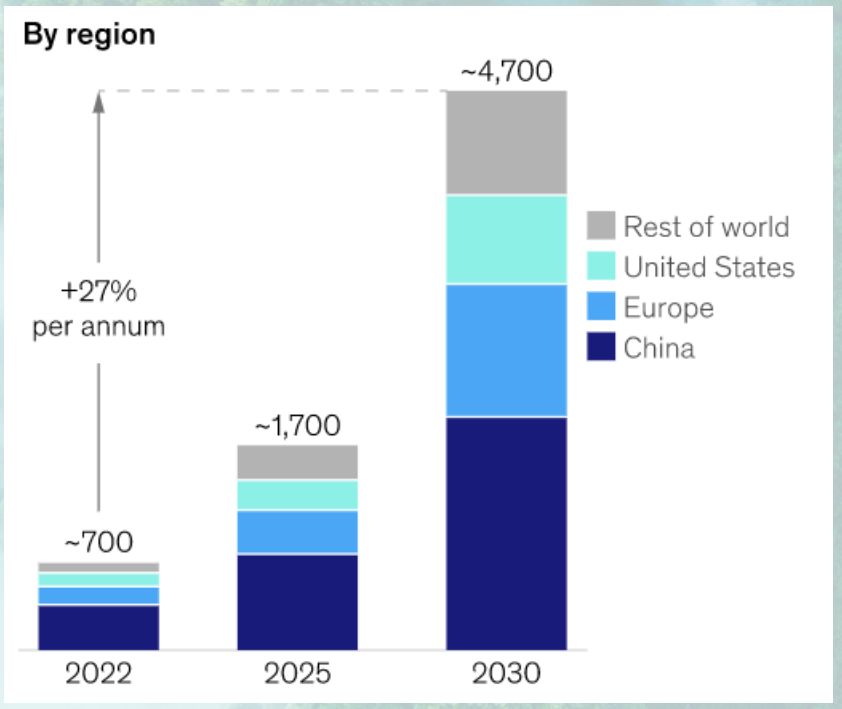
Laptops

Phones and Cameras

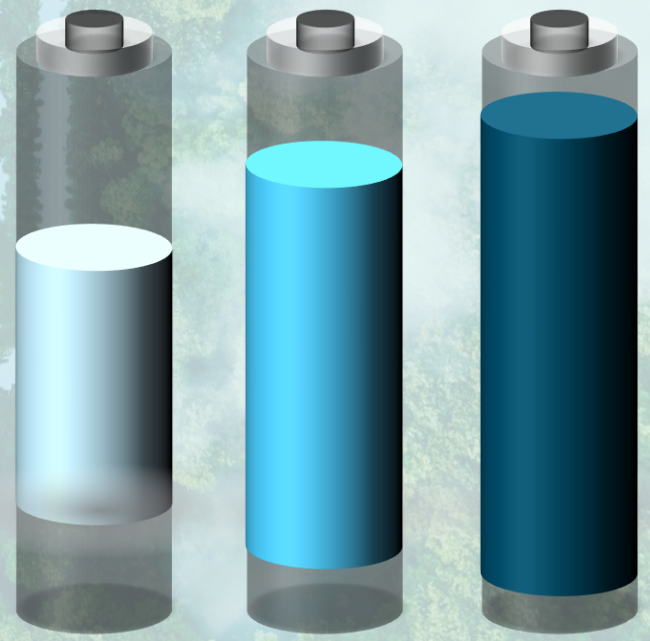
Garden tools

Battery demand is growing

Global demand for batteries is increasing, driven largely by the imperative to reduce climate change through electrification, increased connectivity and the broader energy transition.



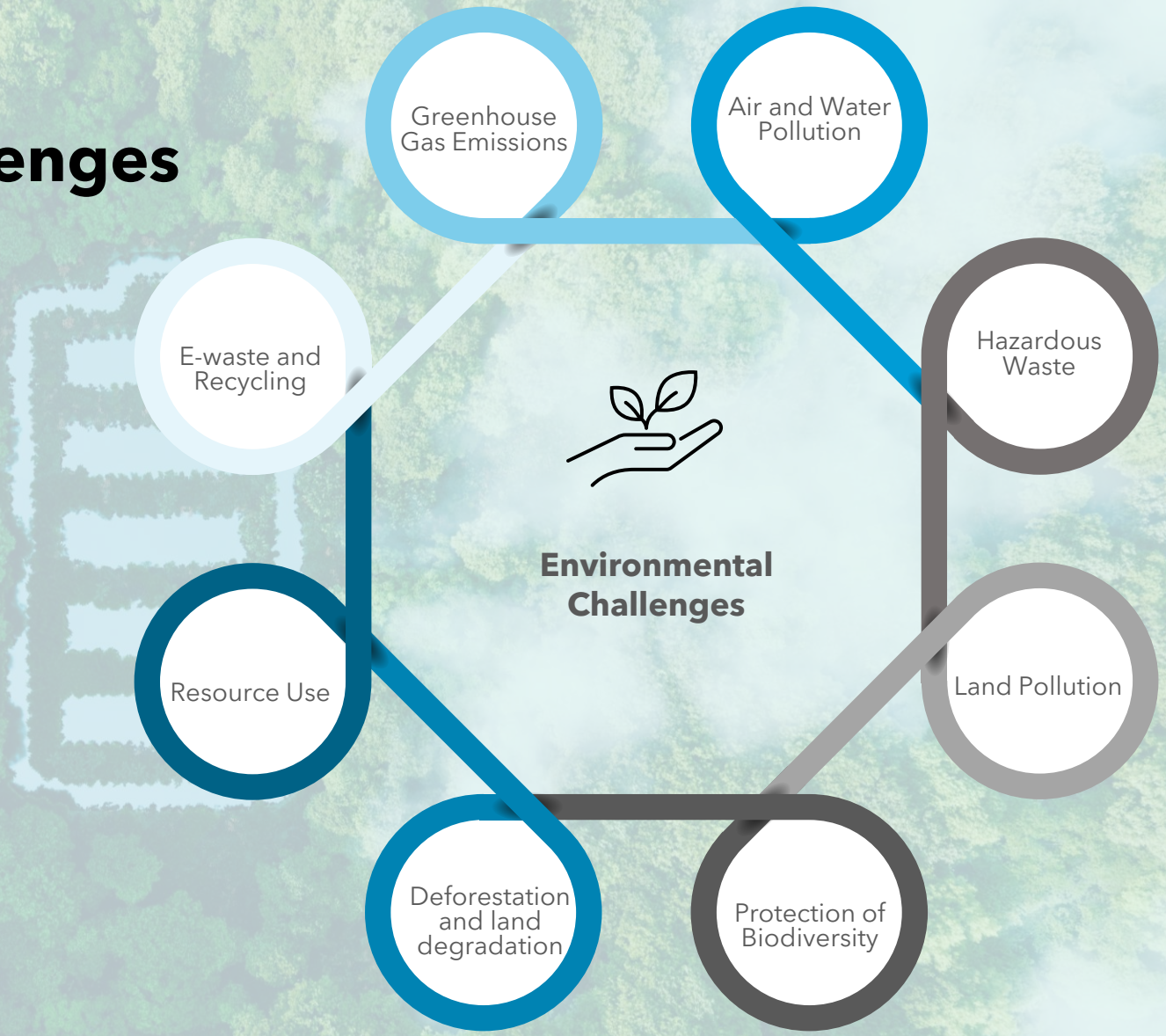
McKinsey



Today's Value Chain Challenges

The global battery value chain, like others within industrial manufacturing, faces significant environmental challenges

The extraction and refining of raw materials, as well as cell production, can have severe environmental effects, such as land degradation, biodiversity loss, creation of hazardous waste, or contamination of water, soil, and air.



Types of Batteries

01

Primary (non-rechargeable) batteries

If the chemical reaction within it that produces electricity is not reversible, the battery is not rechargeable.

02

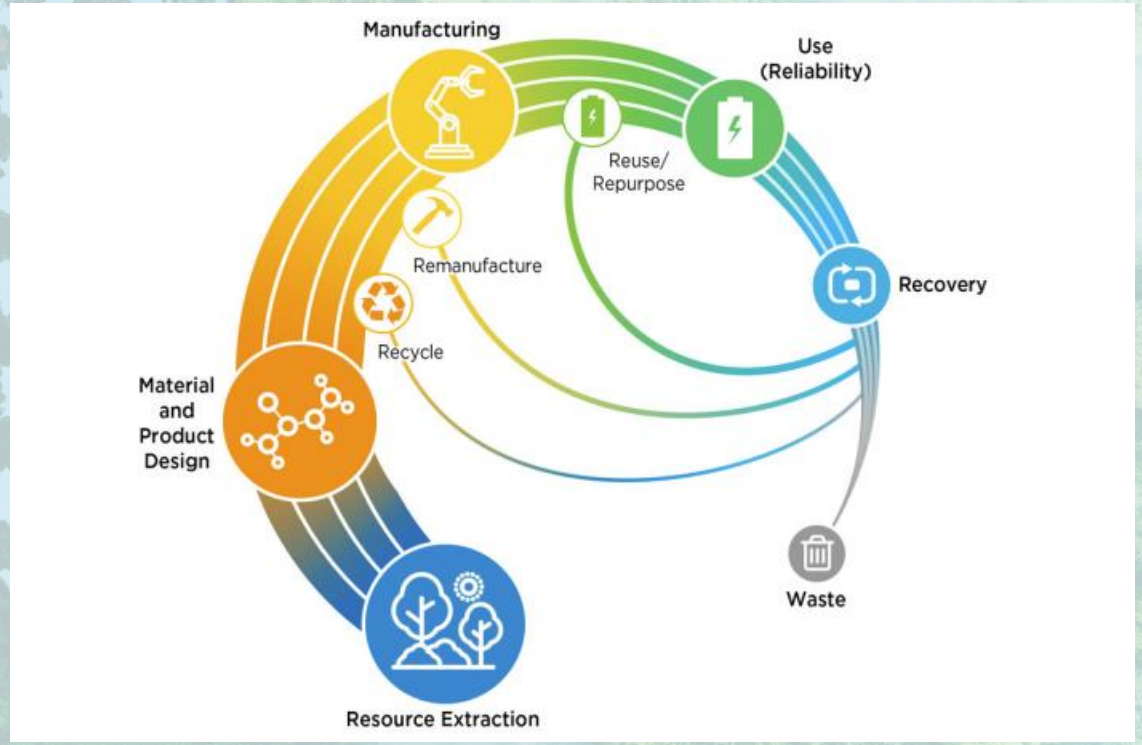
Secondary (rechargeable) batteries

If the chemical reaction within it that produces electricity is reversible, the battery can be recharged via the input of electricity and used repeatedly.

Importance of Circularity in Batteries

The battery industry has to move from a linear to a circular value chain—one in which used materials are repaired, reused, or recycled.

This transformative approach may also create huge economic potential, with some opportunities already available today.



Ellen MacArthur Foundation

ITU is Global

The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies (ICTs)

Strategic Priorities

Digital Connectivity

Sustainable Digital Transformation

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

Innovative energy storage technology for stationary use

Recommendation ITU-T L.1220 introduces an open series of documents for different families of technologies that will be enriched progressively as new technologies emerge that may significantly impact the field of energy storage.

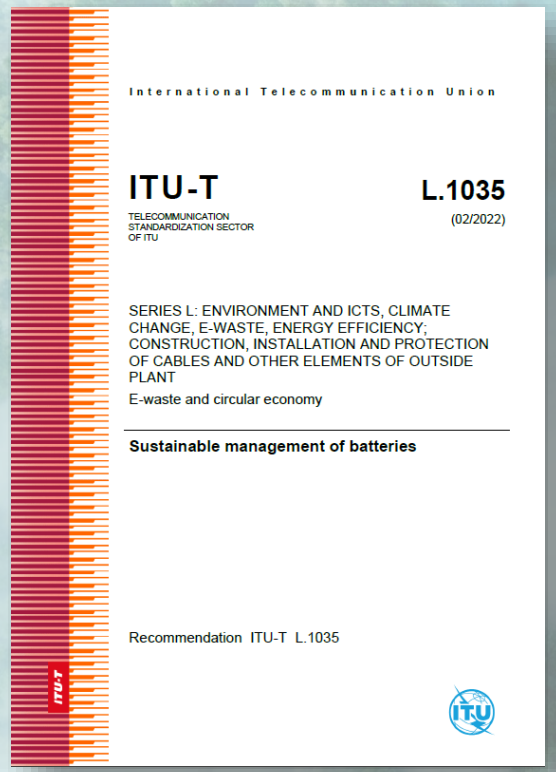
Recommendation ITU-T L122X Series

01 Overview of energy storage

02 Battery systems

03 Supercapacitor technology

Sustainable Management of Batteries

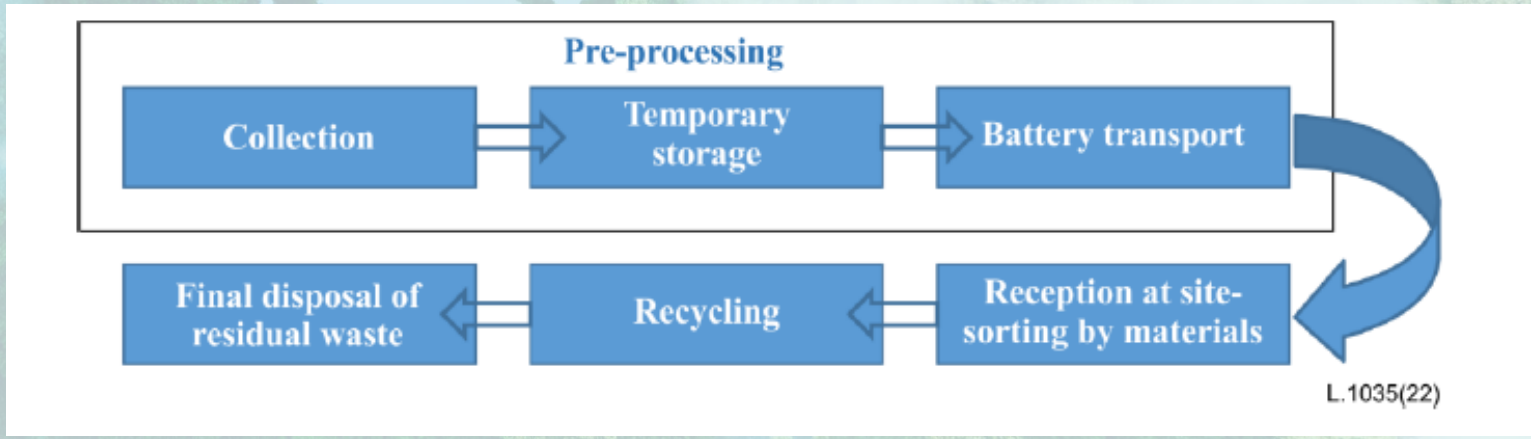


Pre-processing:

- collection and transport from collection sites to temporary storage and pre-treatment facilities;
- reception, sorting and weighing;
- storage at the recycling site.

Processing (recycling):

- manual or mechanical dismantling;
- sorting by type of equipment and storage by type of material;
- recovery and resale of materials and components;
- treatment and final disposal.



Strengthening Collaboration and Implementation of Standards

Collaboration with other SDOs

ETSI ISO IEC

Collaboration Across UN Agencies

World Health Organization

UNFCCC

UNECE

UNIDO

UN environment programme

BASEL CONVENTION

unitar

Collaboration with other Organizations

step
solving the e-waste problem

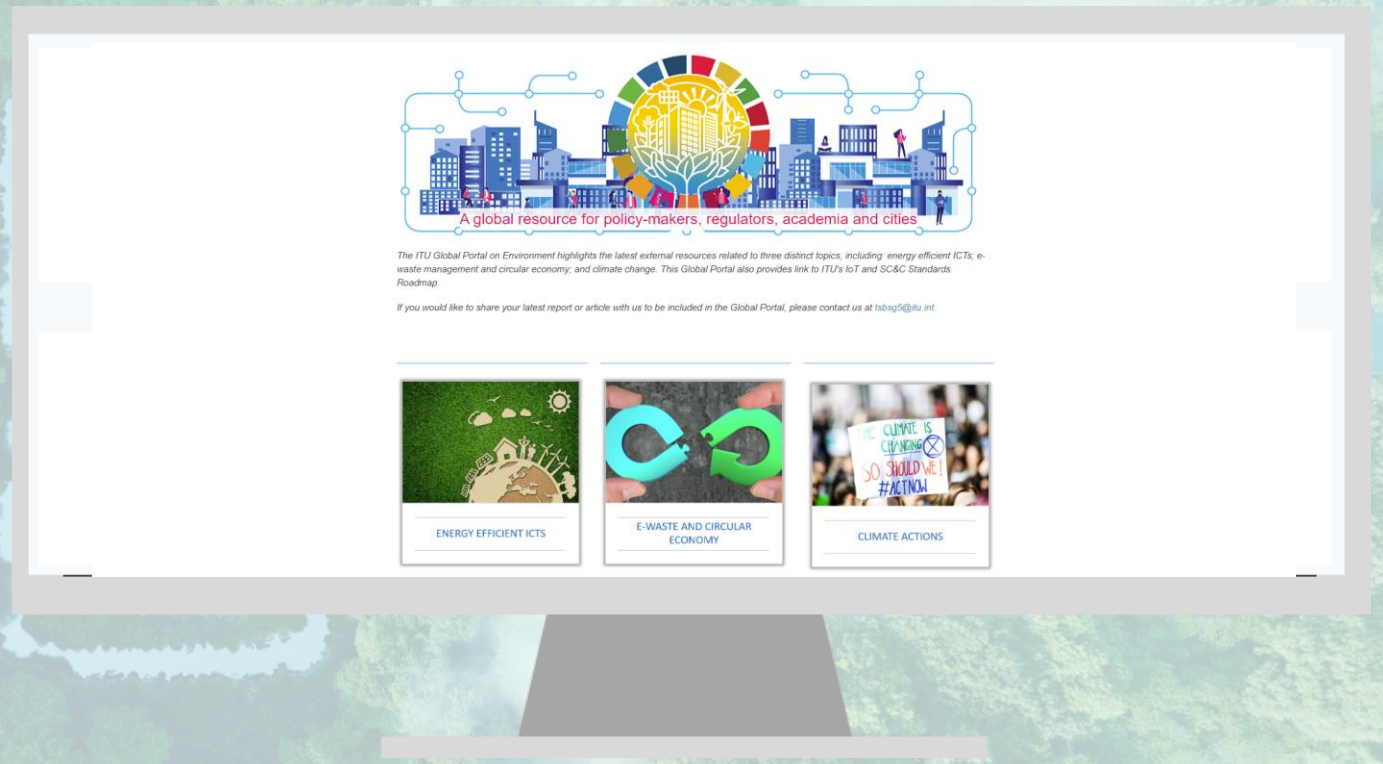
CEP circular electronics partnership

GeSI ENABLING DIGITAL SUSTAINABILITY

CODES
COALITION FOR DIGITAL ENVIRONMENTAL SUSTAINABILITY

Interested in Learning More?

Visit ITU's Global Portal on Environment



Thank you!

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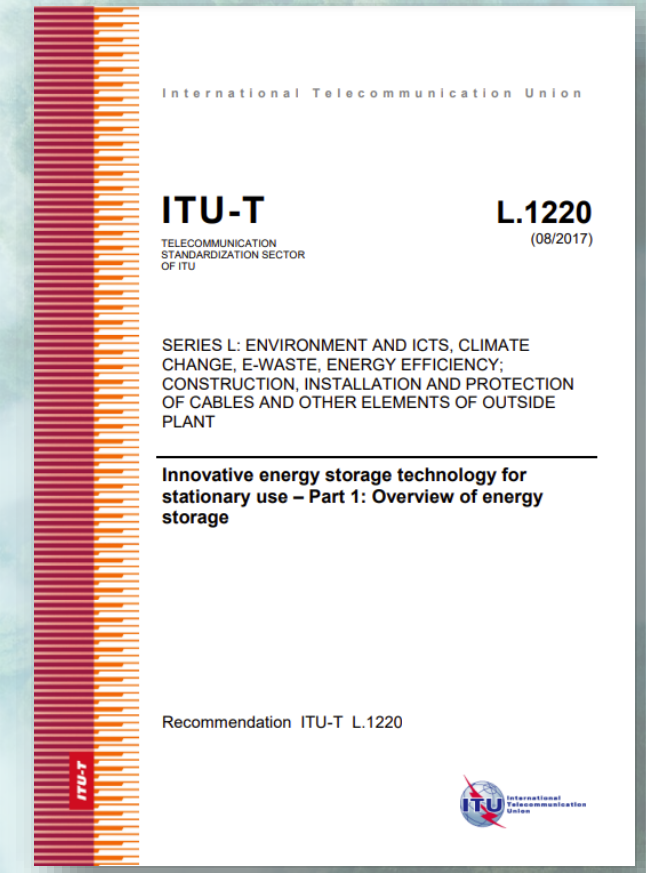
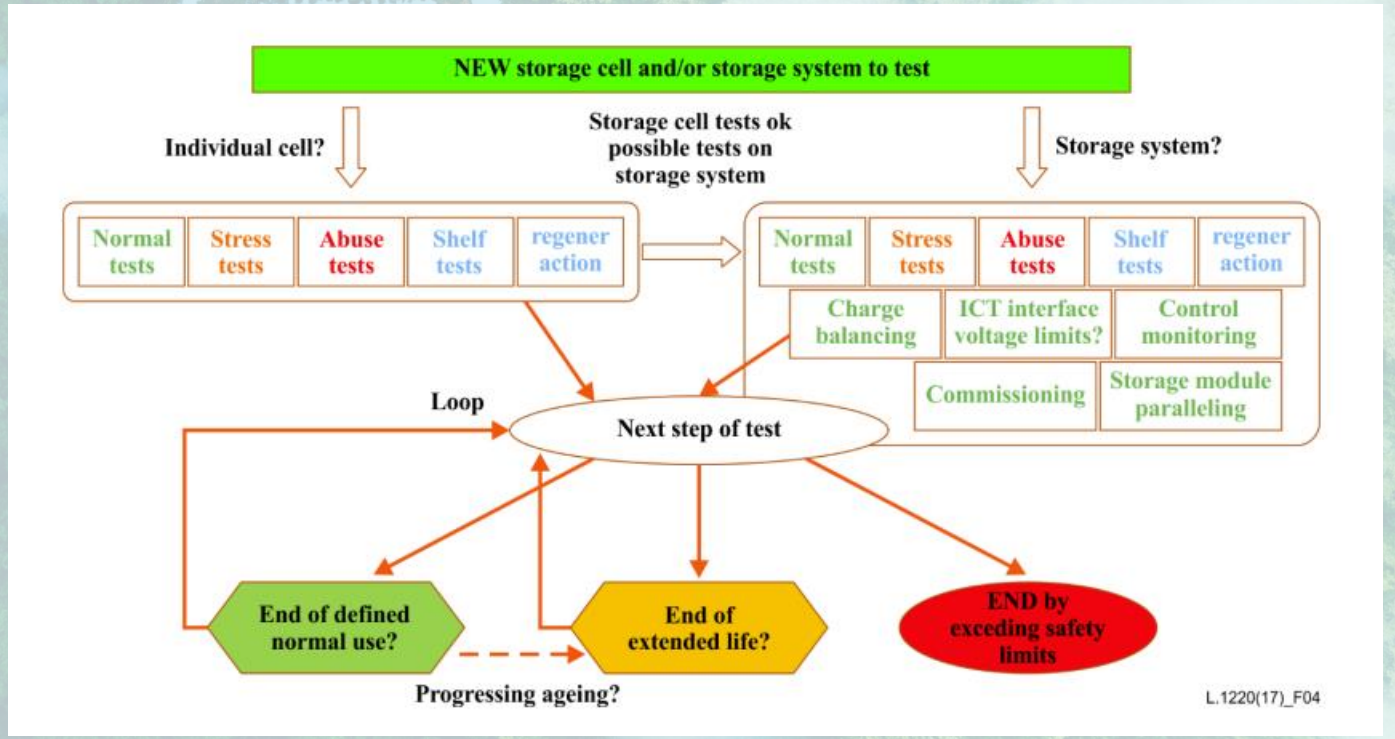
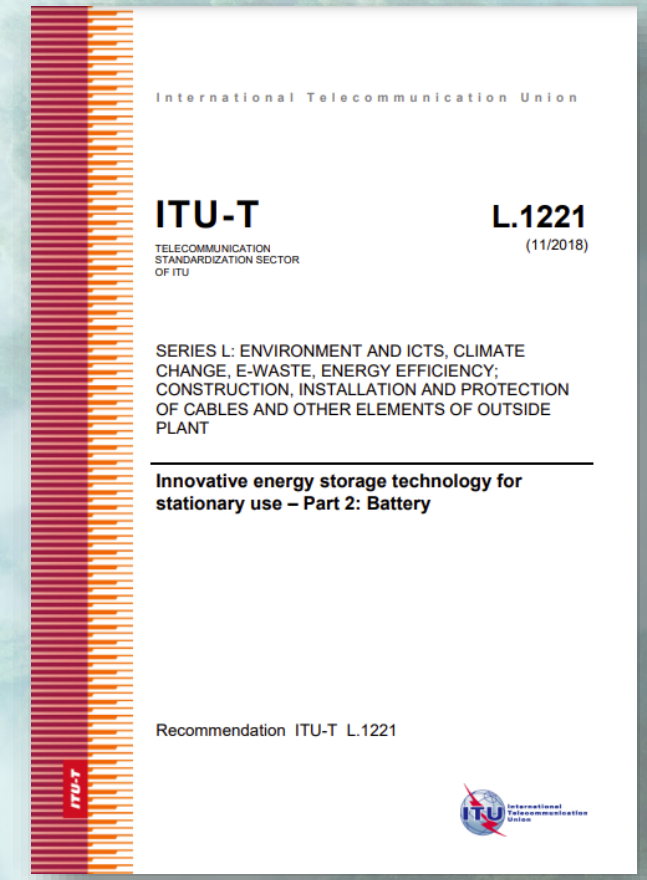
SG5: Environment, climate change and circular economy

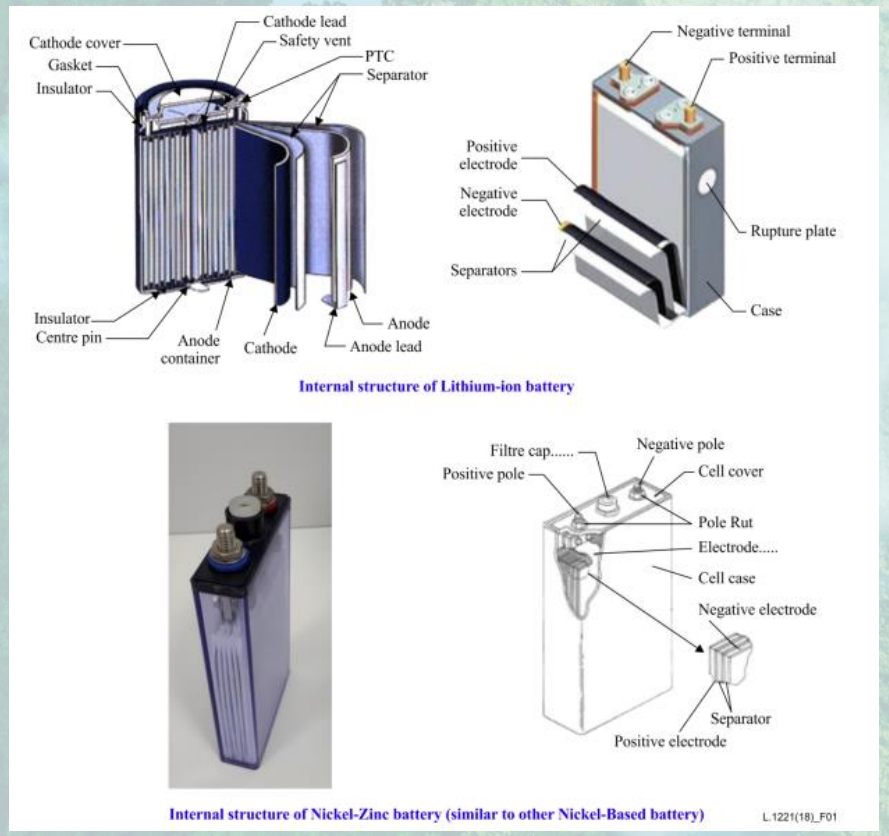
Overview of Energy Storage





Battery Systems





Supercapacitor Technology