Webinar: ICT and Electronic Devices Sustainability

19 October 2022 | 11:00 CET

ESA Hosts:
- Liz Barrow – Liz.Barrow@esa.int
- Marion Allayioti - Marion.Allayioti@ext.esa.int

Guest speakers:
- Scott Butler, Executive Director – Material Focus

Webinar hosts

Liz Barrow

+

Marion Allayioti

Guest speaker:
Scott Butler
Executive Director at Material Focus

Welcome to our webinar

Before we start...

- Please **keep your microphones muted** during the webinar and make sure your webcam is switched off.
- You can use the **chat box** at any time to submit your questions. They will be addressed during the **Q&A** at the end of the webinar.

ICT and Electronic Devices Sustainability – Funding Opportunity

Agenda

1. Introduction
2. ESA Space Solutions
3. 'ICT and Electronic Devices Sustainability' call
4. Guest Speaker: Scott Butler - Material Focus
5. How to Apply
6. Q&A

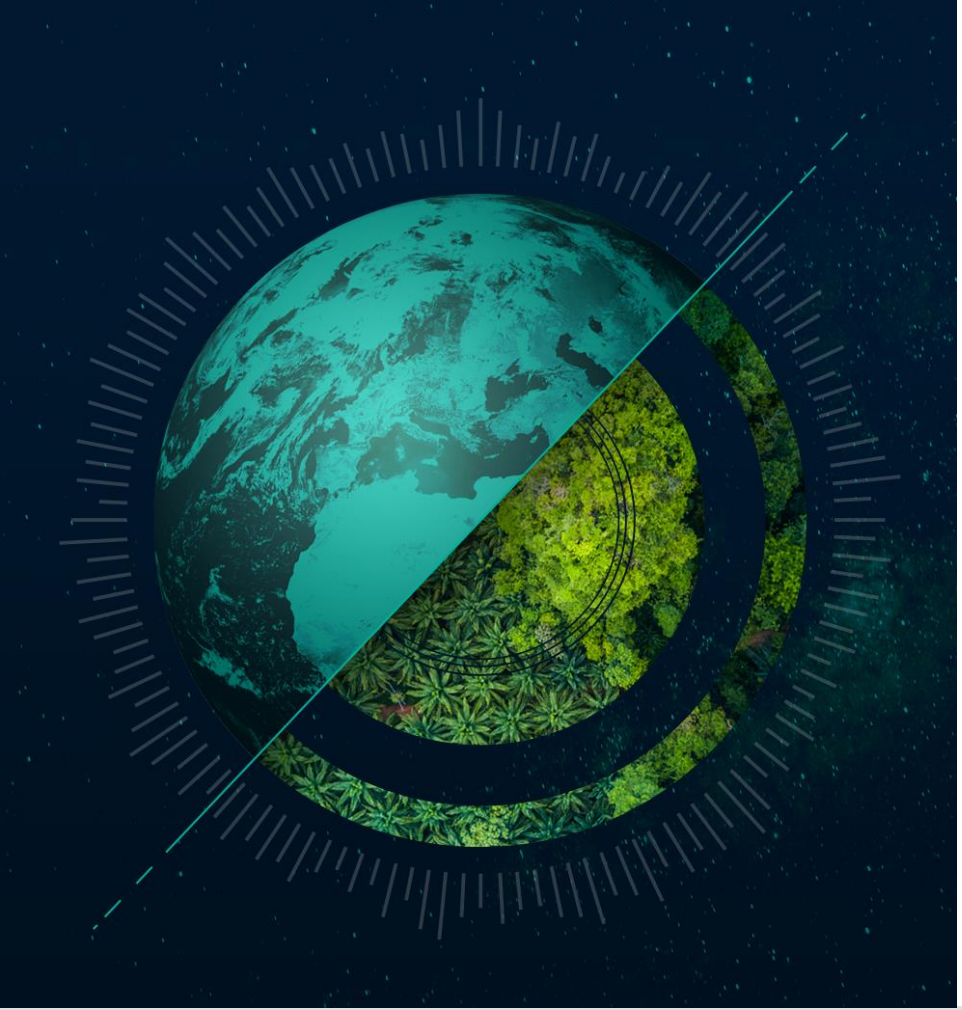
ESA Space Solutions

The largest space innovation network in the world

→The go-to place for great business involving space to improve everyday life

→Supporting European start-ups and SMEs to develop businesses using space technology and data

→Offering funding, business and technical support to help to generate successful business and create jobs



What we offer

- Zero-equity funding (from €50k to €2M+ per activity)
- A personalised ESA consultant
- Technical support and commercial guidance
- Tailored project management support
- Access to our international network of ESA and partners
- Access to our network of investors
- Credibility of the ESA brand

Space tech, users & markets

esa space solutions

Space Technology...

- Earth Observation
- Satellite Navigation
- Satellite Communication
- Spaceflight Technologies
- Space Weather

... to serve Users & Market

- Maritime
- Agriculture
- Environment
- Healthcare
- Financial
- Transport
- Education
- Media
- Energy
- Aviation

esa
space solutions

ICT and Electronic Devices Sustainability

Opening date: 05 December 2022

https://business.esa.int/funding/invitation-to-tender/ict-and-electronic-devices-sustainability

European Space Agency

Who helped us shape this call…

dott

voi.

ICT and Electronic Devices Sustainability

About the Competition

- Winning teams will investigate the technical feasibility and commercial viability of their idea for 9-12 months.
- A proof of concept can be developed during the study.
- Each selected study will receive 80% funding of up to €200K. E.g., ESA funds 200 kEUR, and the team should put forward the remaining 50 kEUR
- Successful teams will have the opportunity to connect with Dott, Voi, and Material Focus during their feasibility study.
- After the study there is the opportunity for further funding and support from ESA.

The Goal

- Our goal is to deliver space-based services that help to tackle sustainability challenges relating to batteries, electrical products, electronic waste, and the ICT sector.

- Solutions can target any part of the product lifecycle, whether it's improving sourcing of materials for the micro-mobility industry or helping to recover useful components from landfill sites.

Key Focus Areas of the Competition

- Enhancing the design, sourcing, manufacturing and supply of batteries and electrical goods
- Ensuring safe usage, storage, charging and repair of batteries and electrical items
- Improving circularity and end of life solutions of batteries and electrical goods
- Counteracting the negative environmental impacts of data centres and blockchain-powered solutions
- And More!

- TIP: Address the challenges, scenarios and use cases provided by Dott, Voi and Material Focus.

Value of space

Global Navigation Satellite Systems (GNSS) - GNSS-based positioning can be used in the development of applications which aim to track battery packs throughout their life cycle and transboundary shipments of disused electrical equipment which may contain illegal e-waste.
GNSS-based positioning can be used to terrestrial vehicles and operators who investigate and counteract unsustainable operations, to plan and optimise their routes or search patterns.
GNSS-based positioning can enable the geo-tagging of in-situ pollution or emissions measurements associated with e-waste storage and processing, and data centres.

Satellite Communication (SatCom) - Satellite IoT networks, including 5G-based, can be used on battery packs equipped to provide the ability of automatically warn emergency responder services in case the pack is breached during an accident, leaking or disassembled without authorisation.
Satcom can function as a key enabler of satellite-based edge computing solutions.

Satellite Earth Observation -Satellite EO can be used for site monitoring where environmentally hazardous operations, take place.

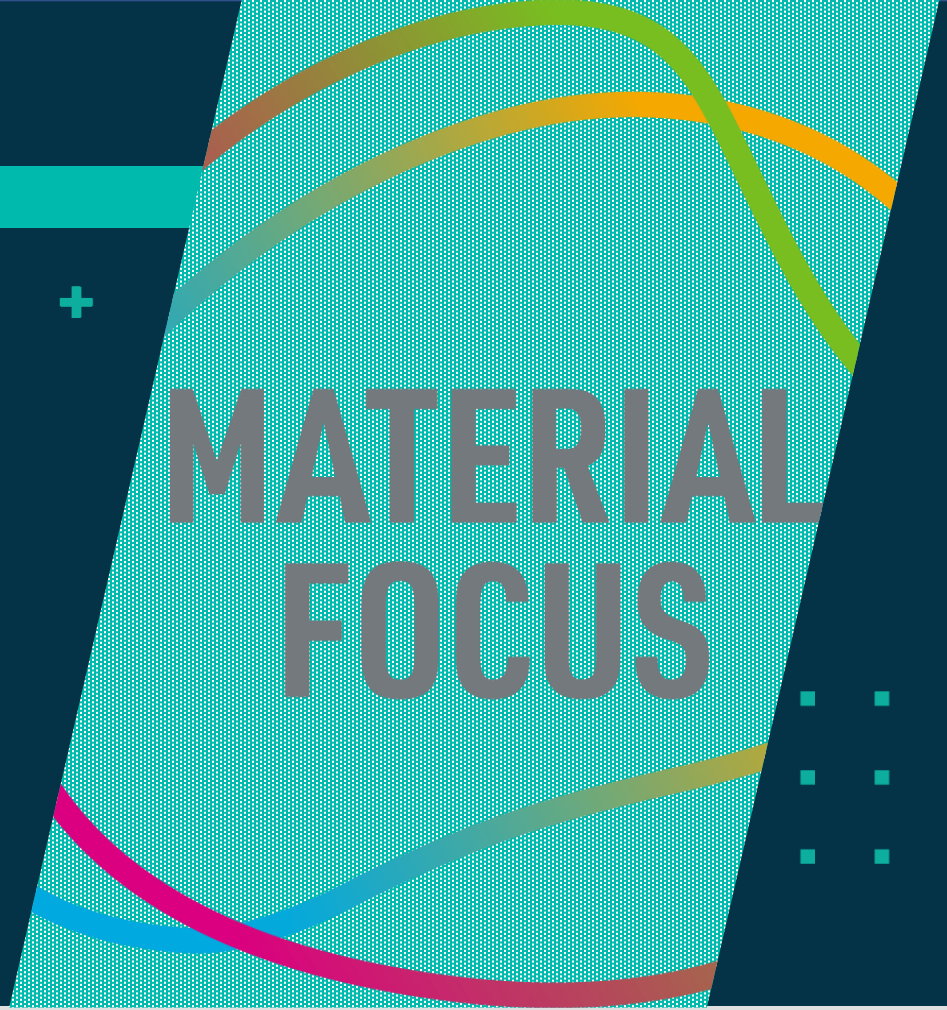
In combination with appropriate machine learning algorithms, satellite EO imagery can be used to detect illicit battery or e-waste storage and processing facilities, smuggling operations and data processing centres with significant heat or local greenhouse gas emissions.

Guest speaker

Scott Butler

Executive Director

Material Focus



What do Material Focus do?

Insights
Identify, produce and share insightful, timely and impactful research to help build a better UK e-waste/WEEE system.

Investments
Identify and fund projects which help make it easier for people to reuse and recycle electricals.

Inspiration
Create and deliver communications which help make it feel easier for people to reuse and recycle electricals through our **Recycle Your Electricals** campaign.

Our impacts since 2020

5,000+ Reuse And Recycling Points

We're making recycling information easy to find in our online locator. And we're adding more recycling locations all the time.

Our impacts since 2020

2 Million More People

From the Orkneys to the Isles of Scilly, we're funding projects which make it easier for over 2 million more people to recycle their electricals closer to home

702,500 Recycling Searches

More and more people are finding their nearest reuse and recycling points on our Recycling Locator

48% More People

Nearly half the people who see our campaign say they plan to recycle their electricals in future. We're making electrical recycling the easy and obvious choice for millions of people.

The issue

What is e-waste and what is the issue?

e-waste (WEEE) is old and unwanted electrical and electronic equipment.

Discarded electricals are one of the fastest-growing sources of waste in the world – and the UK.

And that poses a major threat to the environment and human health, and produces losses to society and the economy.

But anything with a plug, battery and cable can and should be recycled.

Legislation requiring producers and retailers to finance collection and recycling of products at end-of-life has been in place for circa 15 years but.....

What is e-waste and what is the issue?

Resources

If old electricals go to landfill, or are flytipped instead of being recycled, valuable resources are lost forever. That's a big problem.

Economy

Discarded or hoarded household electricals cost the UK economy £370 million per year of lost valuable raw materials such as gold, copper, aluminium and steel.

Financial value

The average UK household is hiding away 20 unwanted electricals. If we passed these on to charities they could make a big difference to people's lives.

Climate change

Producing electricals creates carbon emissions. Recycling our old electricals would cut as much CO2 as taking 1.3 million cars off the road.

Benefits of reuse and recycling e-waste

More sustainable

Recycling equals a cleaner environment. If we recycled all our old electricals we would cut as much CO2 as taking 1.3 million cars off the road.

More from less

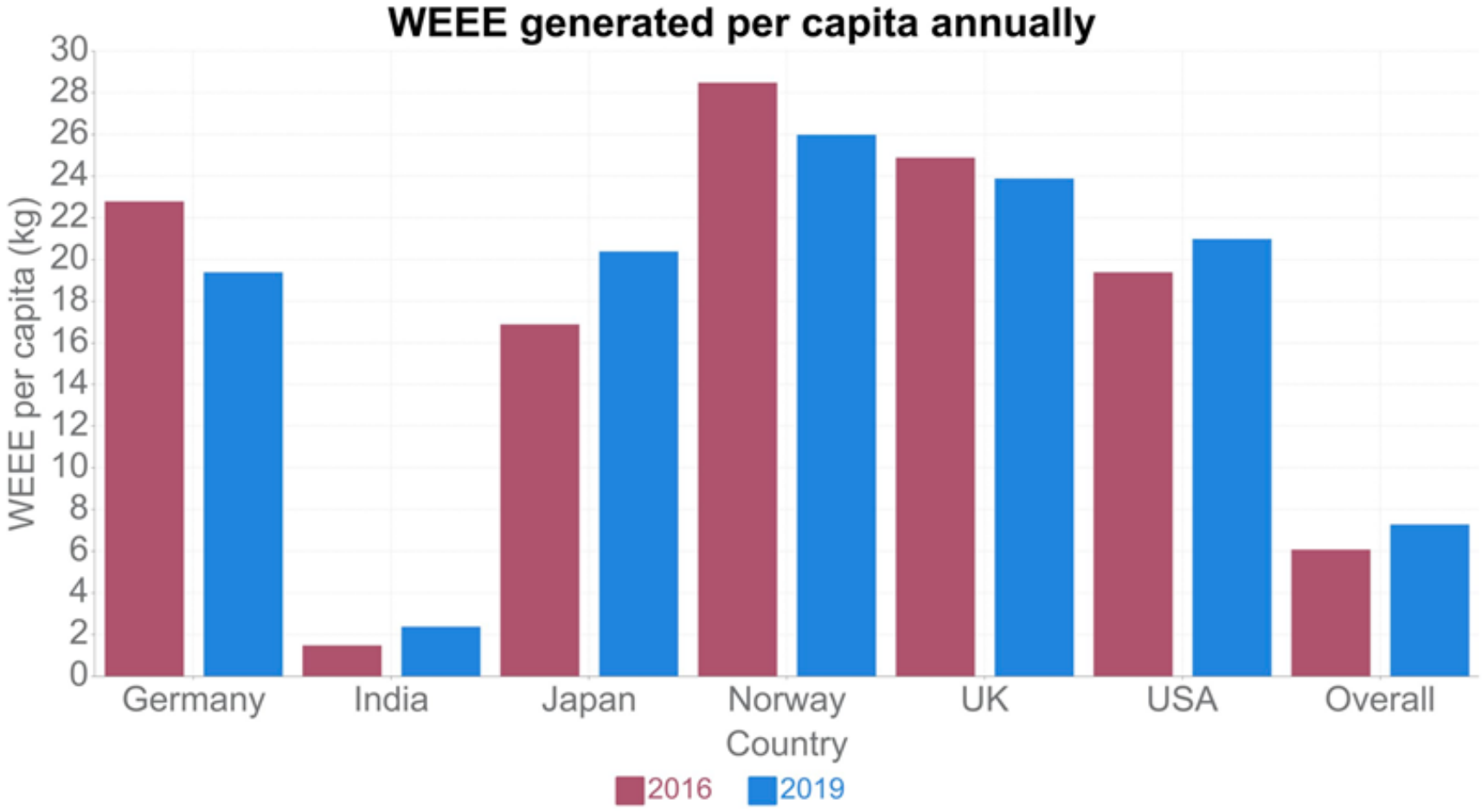
Each year, more than £850 mil of precious metals could be salvaged from our old electricals – including enough gold to make more than 850,000 rings.

More cash

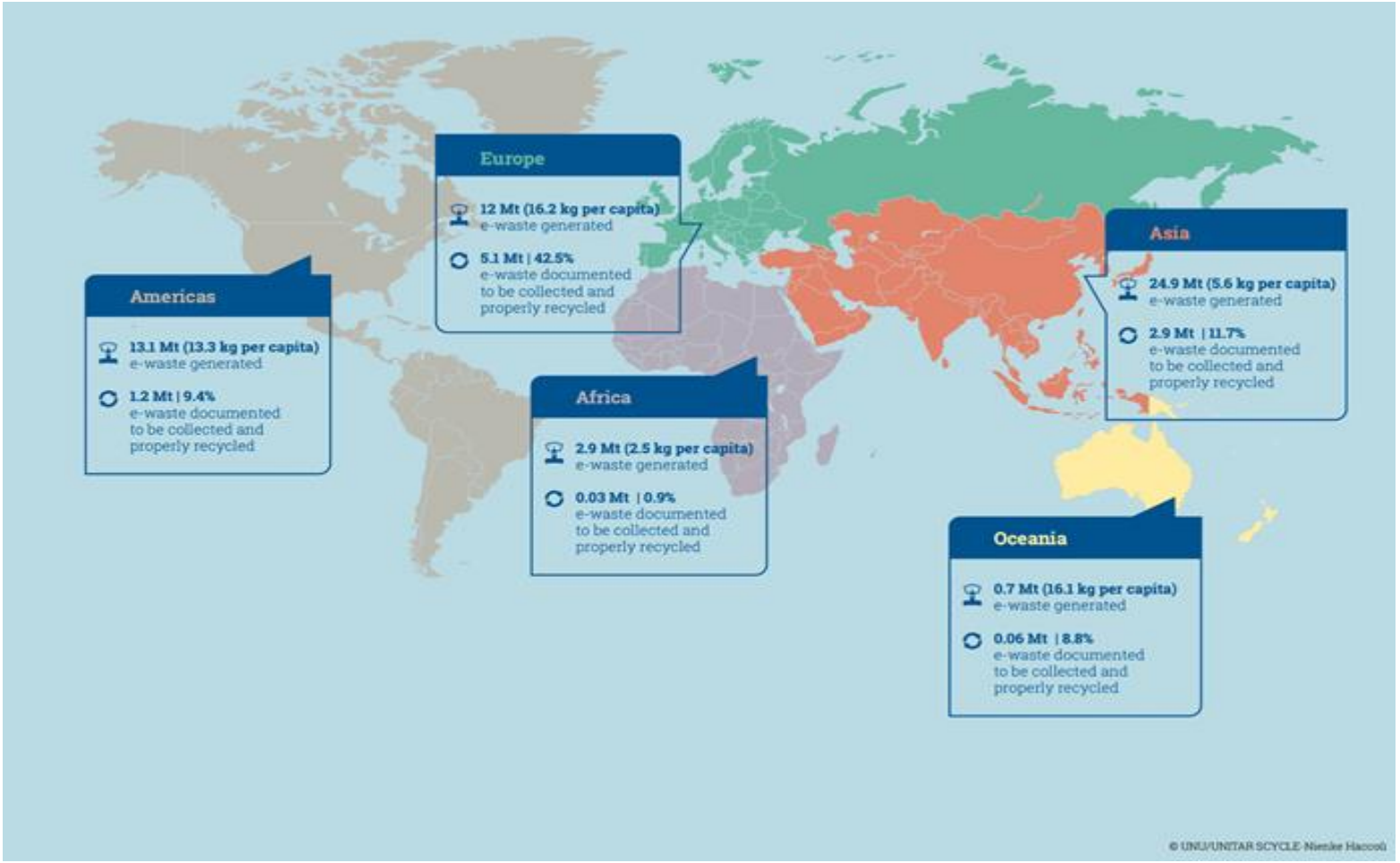
The average UK household could make £620 from selling their unwanted electricals – imagine all that extra cash and shelf space!

More jobs

Recycling our old electricals would create hundreds of new jobs in electrical reuse and recycling – and save valuable raw materials like gold, copper and steel.


WEEE generated per capita annually
WEEE per capita (kg)
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
Germany
India
Japan
Norway
UK
USA
Overall
Country
2016
2019


Global E-waste Generated
44.4 Mt
6.4 kg per capita
Growth of 9.2 Mt since 2014
Global e-waste generated
53.6 Mt
7.3 kg per capita
Global e-waste generated
74.7 Mt
9 kg per capita
2014
2019
2030
17.0% | 7.5 Mt
Global e-waste documented to be collected and properly recycled(i)
Growth of 1.8 Mt since 2014
17.4% | 9.3 Mt
Global e-waste flows that are not documented
82.6% | 44.3 Mt
43.7 Mt
of e-waste is unknown; this e-waste is likely dumped, traded, or recycled in a non-environmentally sound way
0.6 Mt
is estimated to end up in waste bins in EU countries
© UNU/UNITAR SCYCLE-Nienke Hacco0


Europe
12 Mt (16.2 kg per capita)
e-waste generated
5.1 Mt | 42.5%
e-waste documented to be collected and properly recycled
Americas
13.1 Mt (13.3 kg per capita)
e-waste generated
1.2 Mt | 9.4%
e-waste documented to be collected and properly recycled
Africa
2.9 Mt (2.5 kg per capita)
e-waste generated
0.03 Mt | 0.9%
e-waste documented to be collected and properly recycled
Asia
24.9 Mt (5.6 kg per capita)
e-waste generated
2.9 Mt | 11.7%
e-waste documented to be collected and properly recycled
Oceania
0.7 Mt (16.1 kg per capita)
e-waste generated
0.06 Mt | 8.8%
e-waste documented to be collected and properly recycled
© UNU/UNITAR SCYCLE Nienke Hacoob


Growth of 1.8 Mt since 2014
17.4% | 9.3 Mt
Global e-waste documented to be collected and properly recycled
Global e-waste generated 2019
53.6 Mt
7.3 kg per capita
Global e-waste flows that are not documented
82.6% | 44.3 Mt
Collection and recycling rates
Africa
0.9%
Americas
9.4%
Europe
42.5%
Oceania
8.8%
Asia
11.7%
7-20%
is estimated to be exported as second-hand products or e-waste
8%
is discarded into waste bins in high-income countries
Recycled materials are reclaimed
iron
aluminium
copper
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The future

Future trends

Is green purchasing becoming more mainstream?

Better recovery of critical raw materials from smart tech and batteries that we need for future green tech.

Increasing focus on digital poverty and digital inclusion - devices, data and skills.

Valuing social impacts - benefits from increased reuse providing affordable tech and appliances to those in need.

New circular business models

Hire and leasing of products.

Service approaches based on delivering specific performance rather than exchanging ownership of a product.

Incentivised return systems for used products.

Active asset management tracking how clients use products and managing the re-use, repair or redeployment of these assets.

Collaborative consumption with products and services being rented or shared.

Products being designed for long life, supported by guarantees and trusted or self repair.

More information

All of our research is available on the link below:

https://www.materialfocus.org.uk/material-focus-publications-and-research/


700 TONNES OF COPPER
hidden in unwanted cables in UK homes
recycle your electricals
Unwanted cables stashed away in UK homes could circle the Earth
MORE THAN 5 TIMES
Erin wants to know what to do with her bag of old electricals?
Our unwanted electricals have a
£160 MILLION
DONATION VALUE
that could help those in need
We purchase a massive
53.5 MILLION
ELECTRICAL ITEMS
between Black Friday and Christmas
Did you know that even your tiny human ear buds can be recycled?
Every year, the magnetic materials recycled from old old tech could help build
2,667 WIND TURBINES
A massive
8 in 10
of us have been
DECLUTTERING
in lockdown this year!
MORE DATA FOR KIDS = MORE KIDS LEARNING ABOUT RECYCLING
This New Year we'll throw away or hoard
OVER 5 MILLION
UNWANTED ELECTRICALS
as a result of Christmas spending
159,000
bikes
Kim from Essex wants to know if her son's remote control car can be recycled?
There are nearly
12 MILLION
UNWANTED KETTLES
going spare in UK households
There are over
200 MILLION
UNWANTED CABLES, LAPTOPS & SPEAKERS
stashed away across the UK
There are over
8 MILLION
UNWANTED HAIR DRYERS
in UK households, waiting to blow away the cobwebs
Nearly 1 in 3
of us have
SECRETLY DITCHED
a partner's old kitchen gadgets
44% of us
ADMIT TO CHUCKING
obsolete music equipment
527 million

Contact

Recycle Your Electricals is brought to you by Material Focus.

Material Focus is a not-for-profit organisation - our vision is of a world where materials are never wasted.

Please follow us and share our content on social media


facebook.com/recycleyourelectricals


www.recycleyourelectricals.org.uk


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hello@materialfocus.org.uk


@recycleyourelectricals_


linkedin.com/company/materialfocus

Challenge 1: Design
Are there ways for the micromobility industry to leapfrog the automotive industry when it comes to application of **different technologies than Lithium-ion batteries**? Are there solutions viable when thinking about solid state batteries, next generation of batteries (such as Li-S) or hybrid energy systems?

Challenge 2: Sourcing
Our main challenge here is the **traceability** of raw materials, what can be done to increase transparency in the supply chain?

Challenge 3: Storage
The biggest challenges from an operational point of view in terms of storage is how **space consuming** storing facilities are which meet all requirements and regulations regarding health and safety, and the lack of solutions that cover a wider range of conditions regarding **humidity and temperature**.

Challenge 4: Charging
Battery charging is still a relatively 'black box' process where a charger is connected to the battery and a small light indicates the status of a battery. **Smart charging** solutions that focus on **energy density, battery degradation** and/or **speed vs safety** could improve battery lifespan and optimize operational use.

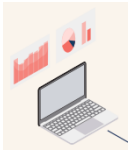
Challenge 5: Repairability
Repairing batteries is complex, requires a very specific expertise and is expensive. Can batteries be designed with **repair in mind**? The main things for us here are modularity, repairability, monitoring of a battery's state while in use and diagnosis when failures arise.

Are there ways to increase the repairability of the current batteries on the market? The main points of development for repairability are **preventative maintenance**, **cost** of dismantling and **cell monitoring/diagnostics**.

Challenge 6: EOL solutions
There is a lack of **scalable and meaningful second life application** for micromobility batteries, especially considering that when a battery is taken out of operation, roughly 80% of cells are still in a good state. What can be done to simplify the process of **cell diagnosis and categorization** and which second life solutions add sustainable value?

Voi has identified the following challenges to be considered by applicants to this Call.

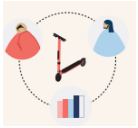
1. Data Analysis



Voi's fleet management teams work centrally to analyse how many vehicles should be placed in specific areas, when they need to be rebalanced, and when they are lost.

Need 1 - Voi needs improved monitoring and analysis of real-time data related to battery health of Voi fleets.

2. Identification of Vehicles for Maintenance and Repairs



Vehicles that require repairing are identified with help from sensors built into the vehicles and user reports, as well as inspections.

Need 2: Easier and improved ways to identify vehicles that require battery-related maintenance.

3. Battery Swaps

Voi's Swap Teams travel on cargo bikes or vans to inspect vehicles and swap to fully charged batteries

Need 3: Better ways to locate and swap batteries

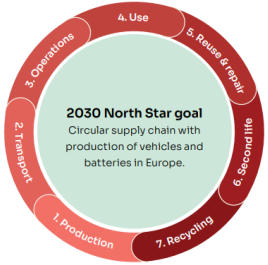
4. In-field maintenance and repair

Vehicles are taken to Voi warehouses for maintenance and repairs.

Need 4: Ways of enabling in-field battery-related maintenance and repair tasks to reduce the need for transporting vehicles to warehouses and to extend battery/vehicle lifespan

1. Operating fully circular vehicles

Voi aims to operate fully circular vehicles, produced in Europe with renewable energy by 2030. Voi already reuses spare parts for repairs and 71% of vehicles not in use receive a second life with their batteries via Voi Resell.



Need 5: Ways of establishing zero waste (including e-waste) in warehouses by 2024
Need 6: Tracking and reusing all spare parts (including electrical components) by 2023
Need 7: Reconditioning for damaged batteries by 2023

2. Responsible Sourcing

The Voiager 5 is Voi's most circular and repairable vehicle so far, featuring 30% recycled materials and 90% recyclable materials. Li-ion batteries are sourced from companies who operate mineral management systems to reduce the risk of using batteries that contain conflict minerals.

Need 8: Ways of sourcing and tracing materials more efficiently and responsibly.

For more information, please see these sources:

- https://www.voiscooters.com/wp-content/uploads/2022/06/Voi-Vision-Statement-2022.pdf
- https://www.voiscooters.com/sustainability/

How to apply

- Register by completing the online questionnaire on esa-star registration (this provides for the minimum 'light registration'): Home - esa-star Registration System
- Visit esa-star publications and search for this opportunity to download the official tender documentation. Use the official documents to prepare your proposal.
- Write your proposal and obtain a Letter of Support from your National Delegation. Contact information can be found under: National Delegations | ESA TIA.
- Submit your proposal via esa-star Tendering by 05 March 2023.
- ESA will evaluate your Proposal.

Funding eligibility

- Companies residing in the following Member States will be eligible to apply: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland and the United Kingdom

- The bidder shall send the Proposal to their National Delegation(s)

- Letter of Authorization from bidding team's national delegation(s) is needed and must be submitted as part of the Bidder's Full Proposal. Without this letter, the proposal is not eligible

- The contacts of the National Delegations can be found at https://business.esa.int/national-delegation

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Q&A

https://business.esa.int/funding/invitation-to-tender/ict-and-electronic-devices-sustainability