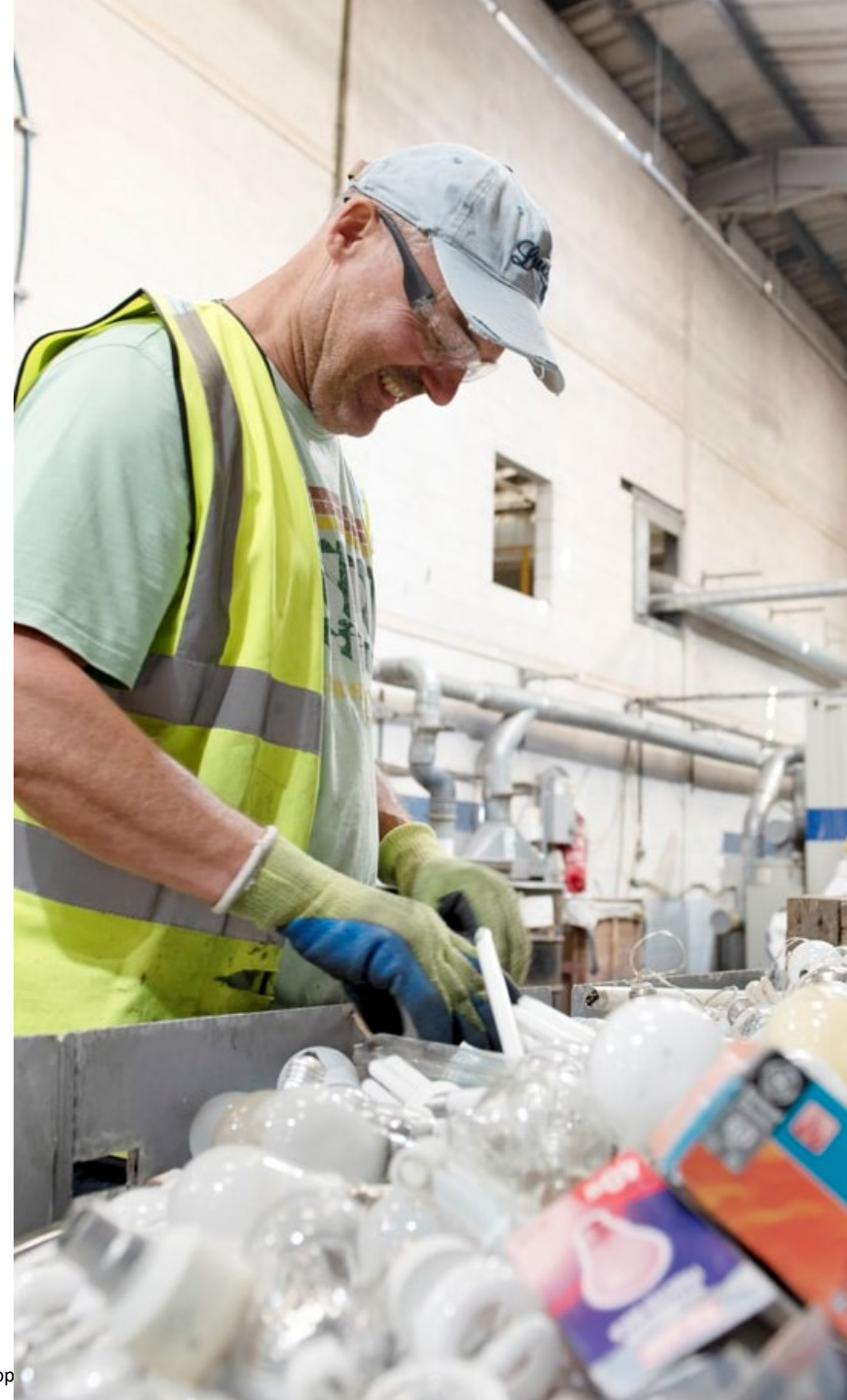
Recouping Value from WEEE

Maximising Value and Employment through E-Waste Recycling in Southeast Asia

wiser environment Việt Nam

Agenda

- Introduction to Wiser Environment & Recycling
- Understanding WEEE and its categorization
- The European model of WEEE management
- Current state of WEEE in SEA
- Potential value and employment opportunities
- Challenges and considerations



wiser environment Việt Nam

About Wiser Environment & Recycling

- **Wiser Environment:** Founded in 1999, offering expert consultancy in sustainable waste management, environmental compliance and resource efficiency.

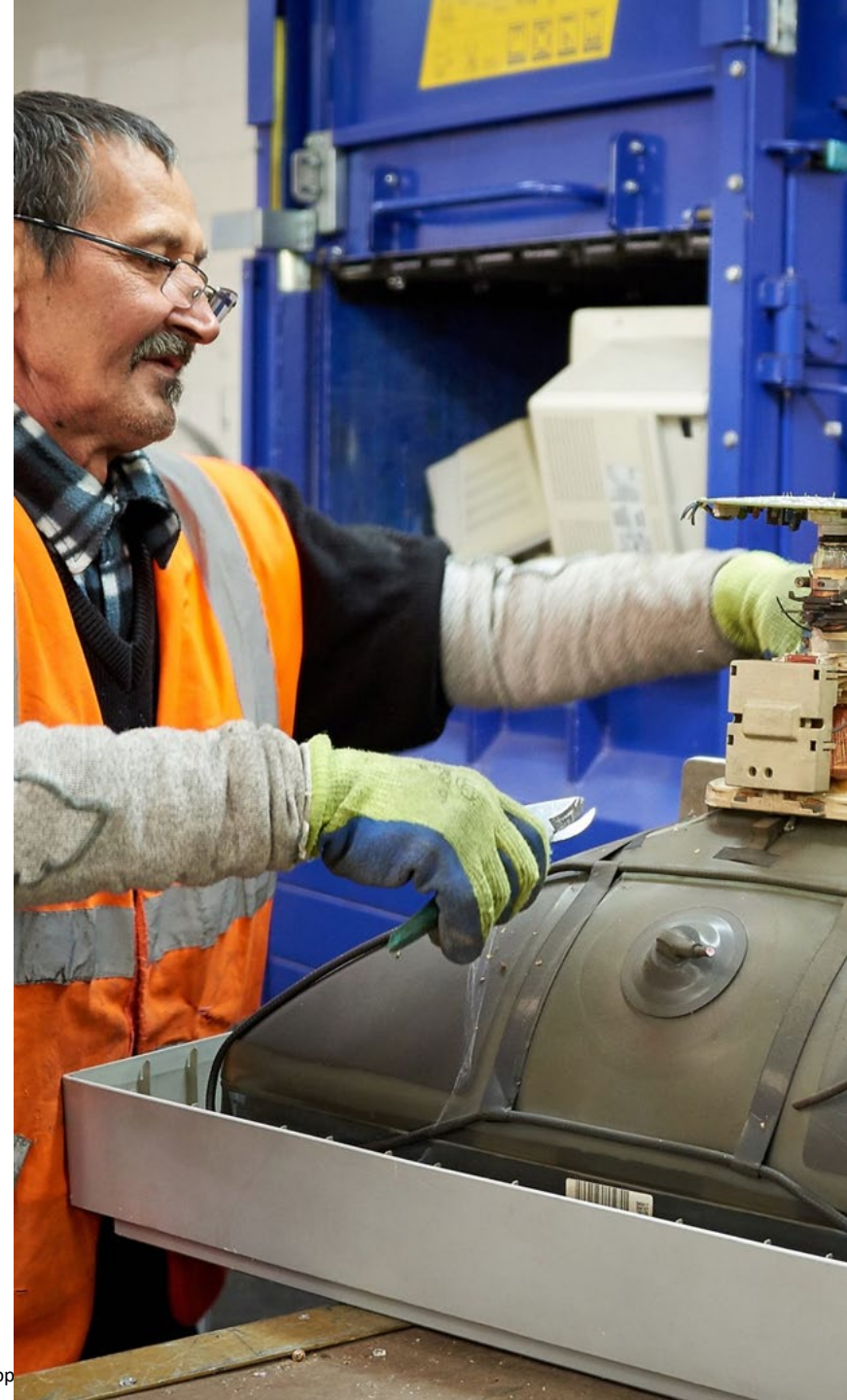
- **Wiser Environment Vietnam:** Opened a representative office in 2019, now a limited company. We provide consultancy across various sectors, tailoring EU expertise to fit local requirements.

- **Wiser Recycling:** Established in 2003, operational from 2007, specialising in the collection, processing and recycling of Waste Electrical and Electronic Equipment (WEEE) under UK regulations.

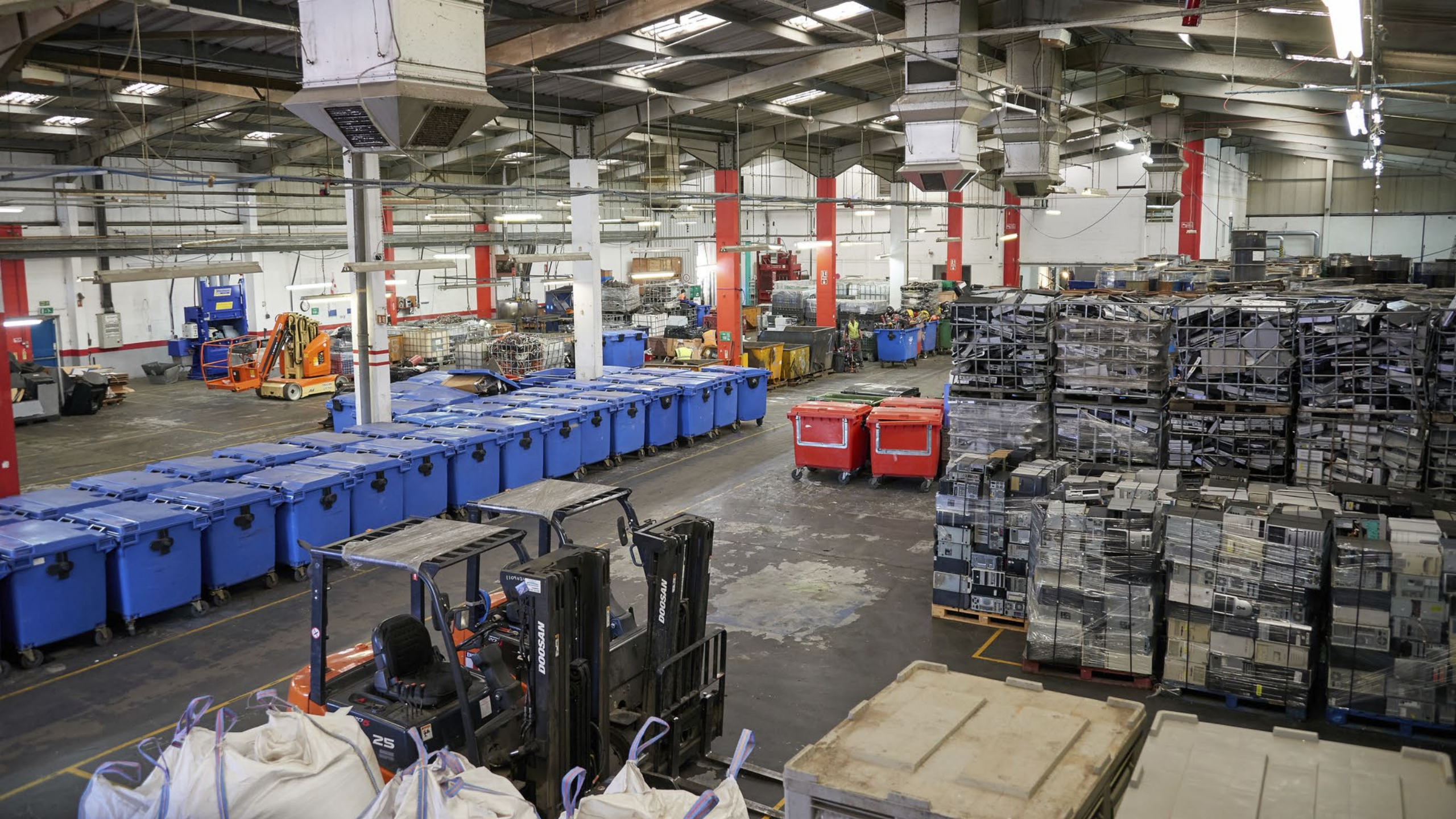
wiser environment Việt Nam

What is WEEE?

- WEEE refers to discarded electrical or electronic devices. These include anything with a plug or battery.
- **Lamps**: Light bulbs, fluorescent tubes.
- **Photovoltaic Panels (PV)**: Solar panels.
- **Small Appliances**: Phones, toasters, kettles.
- **Large Appliances**: Washing machines, ovens.
- **Display Equipment**: TVs, monitors.
- **Cooling Equipment**: Refrigerators, air conditioners.



wiser environment Việt Nam


DOOSAN
DOOSAN
25

Producer Responsibility in the EU/UK

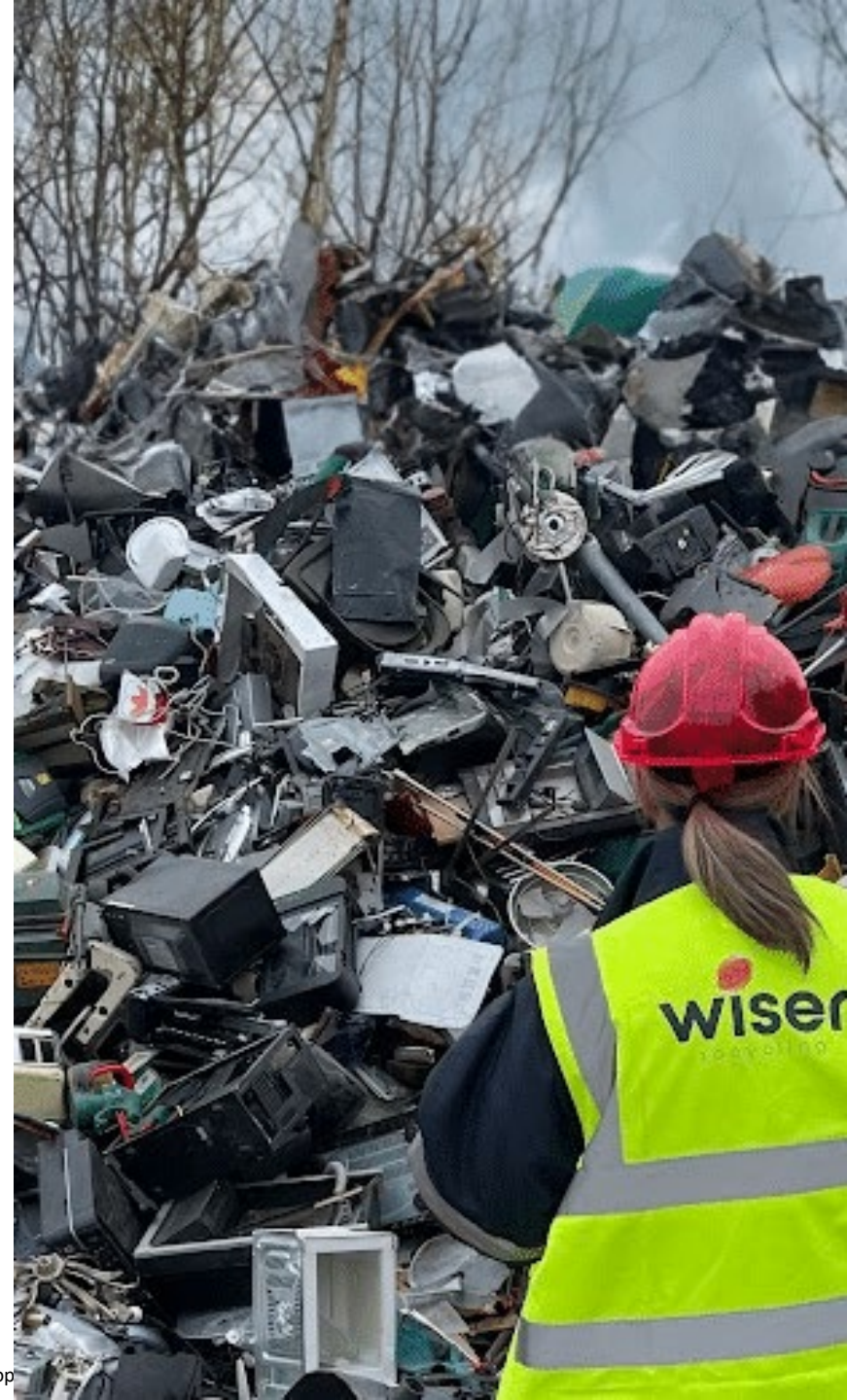
The concept of **Producer Responsibility** ensures manufacturers are accountable for managing the end-of-life phase of their products.

- **EU Directive Implementation**:
  - **Introduced in 2005**, requiring producers to finance the collection, treatment and recycling of WEEE. Enacted into UK Regulations 2007
- **Funding Mechanism**:
  - Financed by producers in proportion to the EEE they place on market (POM)
  - And by value materials sales, and commercial charges
- **Impact**:
  - Significant rise in WEEE collection and recycling since regulations were introduced.
  - Significant investment in facilities and equipment, and in job creation and upskill

wiser environment Việt Nam

EU/UK WEEE Statistics

- **EEE POM**:
  - Annual EEE POM in the EU and UK currently amounts to 13.5 million tonnes.
- **WEEE Collection & Recycling**:
  - EU and UK collection rates have steadily risen since the implementation of the WEEE Directive.
  - Current Collection and Recycling Data outlines a 46.2% recovery rate in EU (on a 65% target).
- **Uncollected WEEE**:
  - A significant proportion of WEEE still ends up in landfills or incineration.



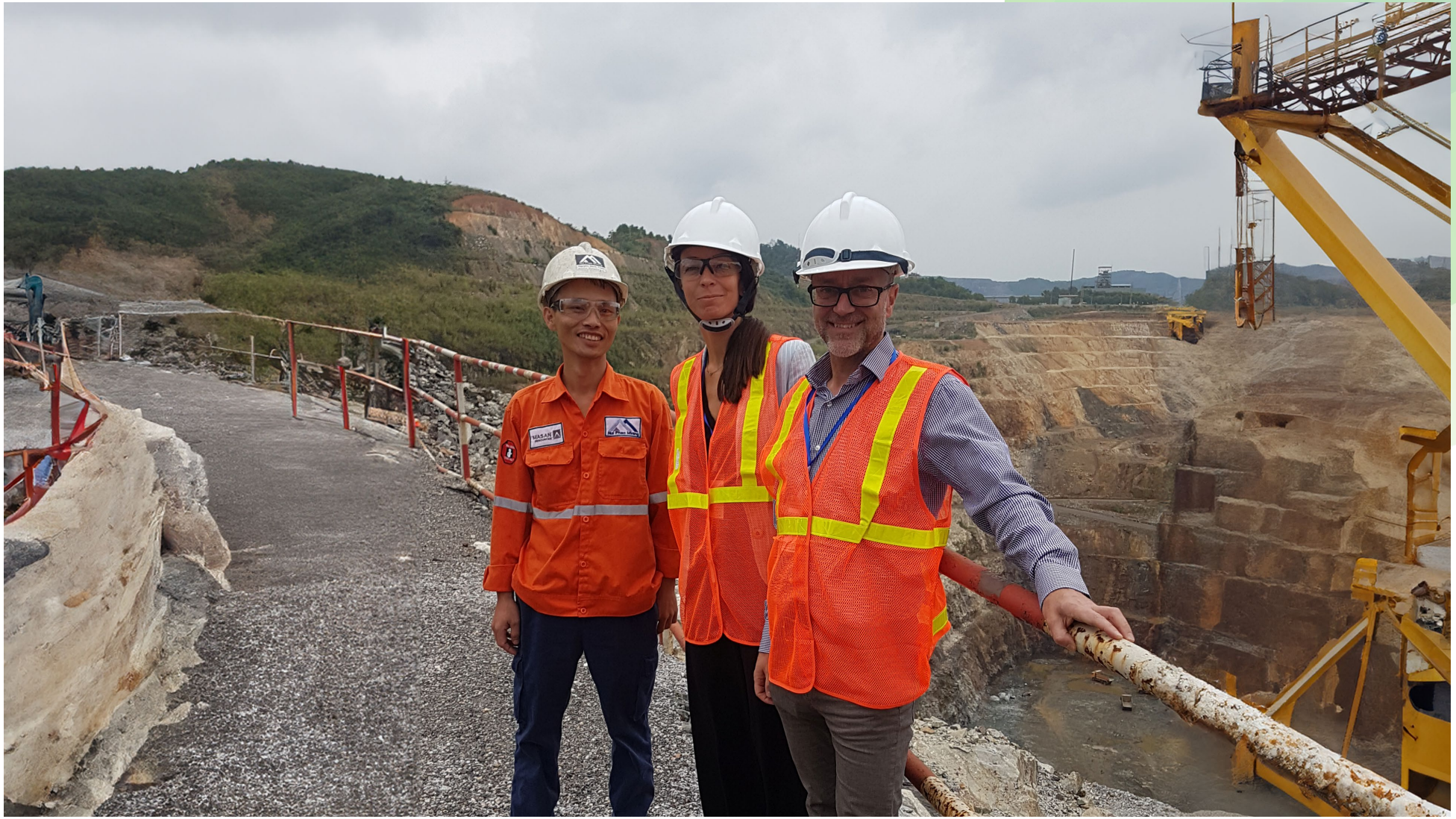
wiser environment Việt Nam

Material Composition of WEEE

- **Key Constituents in WEEE**:
  - **Metals**: Precious metals like gold, silver, copper, and aluminium.
  - **Plastics**: Various polymers used in casings and components.
  - **Glass**: in gas discharge lamps, televisions, large appliances
  - **Rare Earths:** in phosphor powders and batteries
  - **Hazardous Materials**: Lead, mercury, cadmium, flame retardants.
  - **Batteries** – including lithium-ion

wiser environment Việt Nam

Why Bother to Recycle WEEE ?



wiser environment Việt Nam

Why Bother to Recycle WEEE ?

- **Carbon Emissions**
  - **Gold**:
    - Typical % in ore is 1.0 to 10g per tonne ore
    - In certain WEEE components (PCB and mobile phones) 200 to 350g per tonne
  - **Copper**:
    - Typical % in ore is 0.4 to 2%
    - Average in general WEEE materials is 2% to 5%.
  - **Significant land take, environmental emissions, carbon footprint, and raw materials needs are saved by recovery from e-waste**

wiser environment Việt Nam

Wiser Recycling Key Figures

- **WEEE Processed**
  - This year estimated to be **15,000** tonnes WEEE
  - Equates to only 2% of the UK WEEE market
- **Value**
  - 2023 materials values average **$160** for each tonnage input
  - 2023 reuse values average **$1,400** per tonne
  - NOTE – the value up the supply chain will increase significantly
  - (UK industry is significantly over $100M)
  - But losing even more value to landfill and incineration
- **Employment**
  - 90 people employed to process 2% of UK material (4,500 in UK ? How about upstream ?)
  - Low skilled to higher skilled jobs (highly mechanised and technical processes)
  - Average of around 200 tonnes processed per person per year

wiser environment Việt Nam

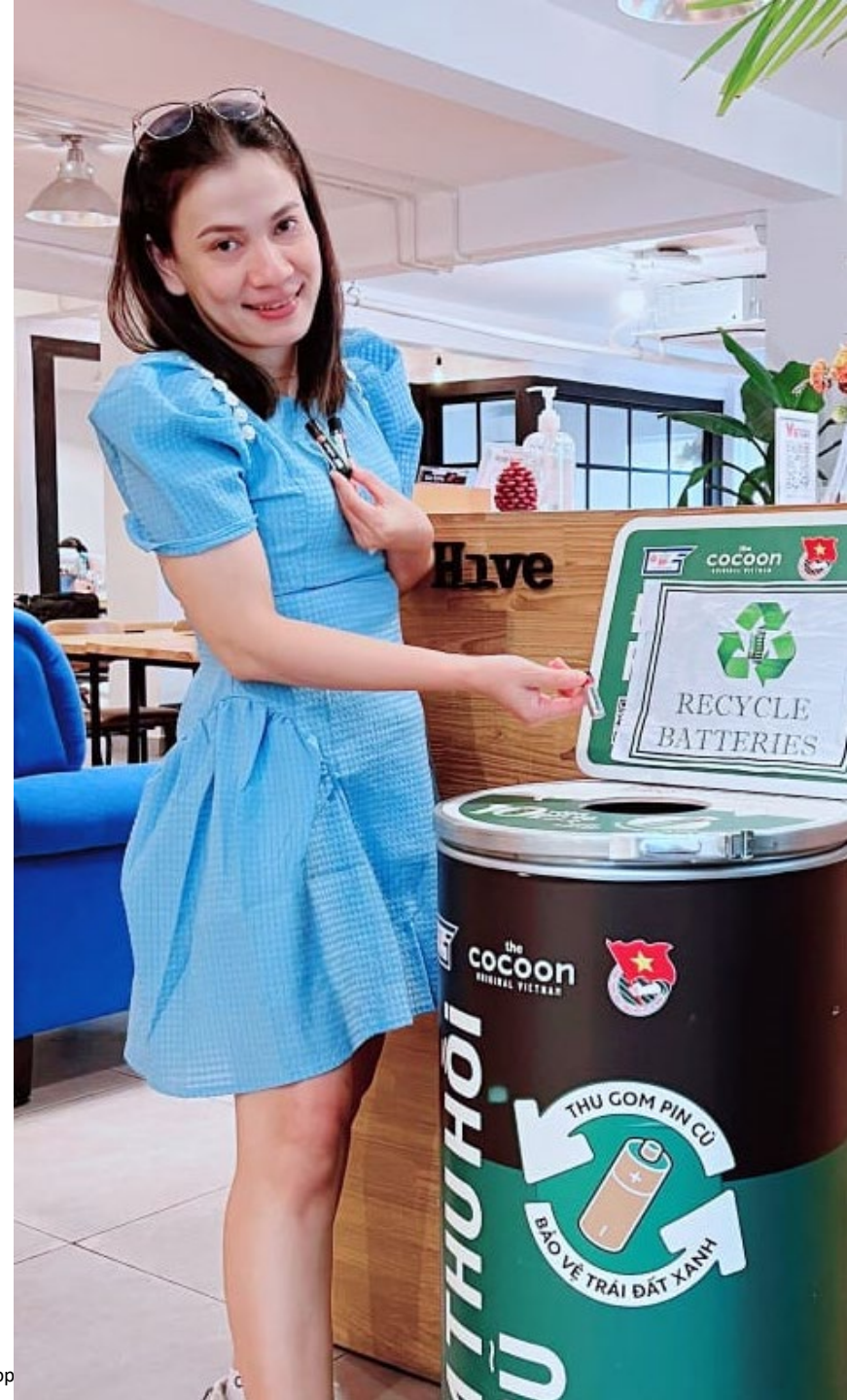
Extrapolated Figures South East Asia

- **WEEE Generation**
  - Some estimates at over 12 million tonnes per year
- **Value**
  - Significantly over $2Bn
  - Is that the value currently being lost to landfill ?
- **Employment**
  - Significantly over 50,000

wiser environment Việt Nam

WEEE in Southeast Asia (SEA)

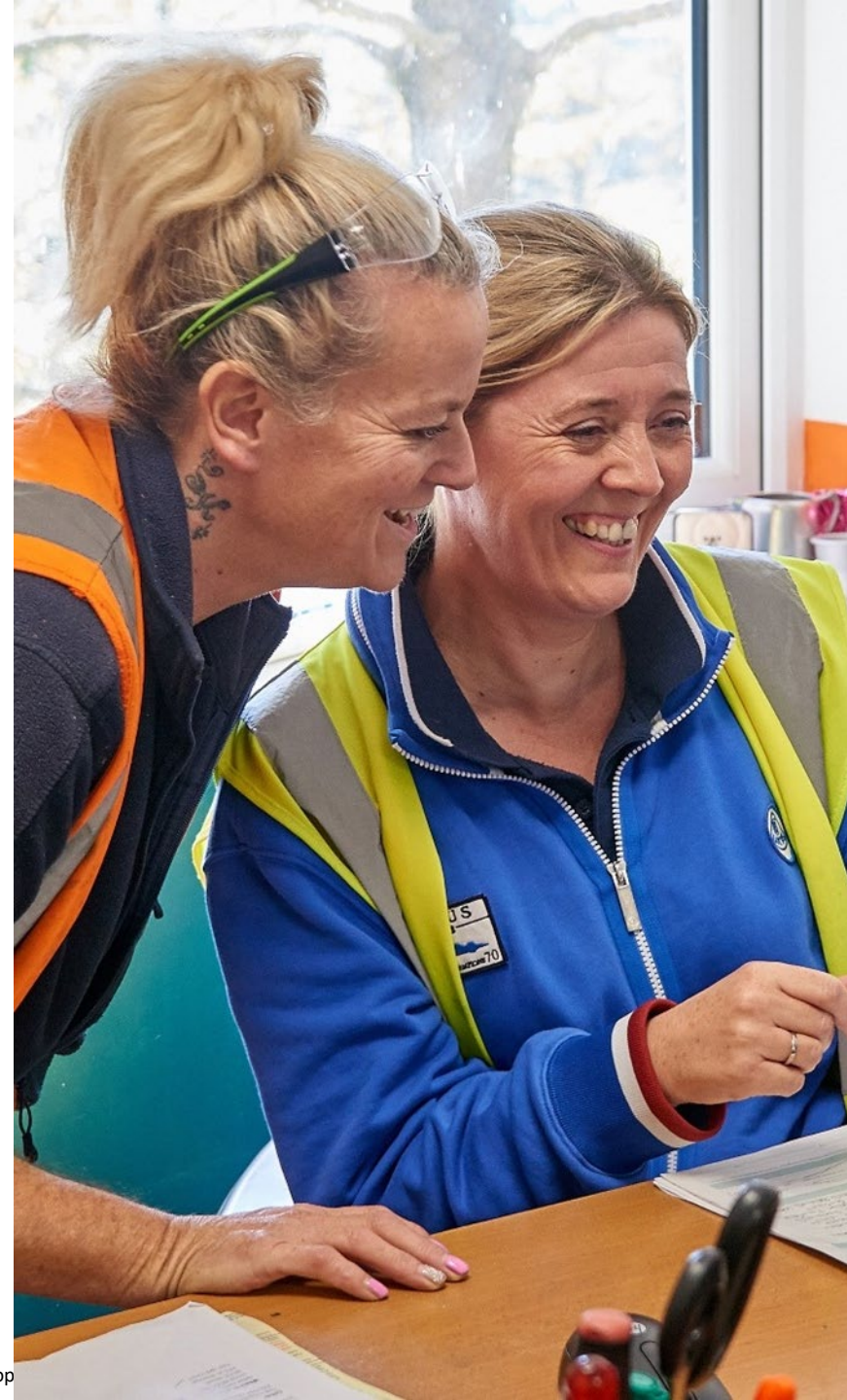
- **POM EEE in SEA**:
  - Rapid growth in electronic goods consumption across Southeast Asia.
- **Recycling Practices**:
  - Dominated by informal recycling sectors with limited infrastructure for large-scale, formal recycling.
- **Recycling Volumes**:
  - Data is difficult to find
- **Challenges**:
  - Unrecycled WEEE often ends up in the general waste stream, contributing to environmental and economic losses.
  - **Proportion in Waste Stream**:



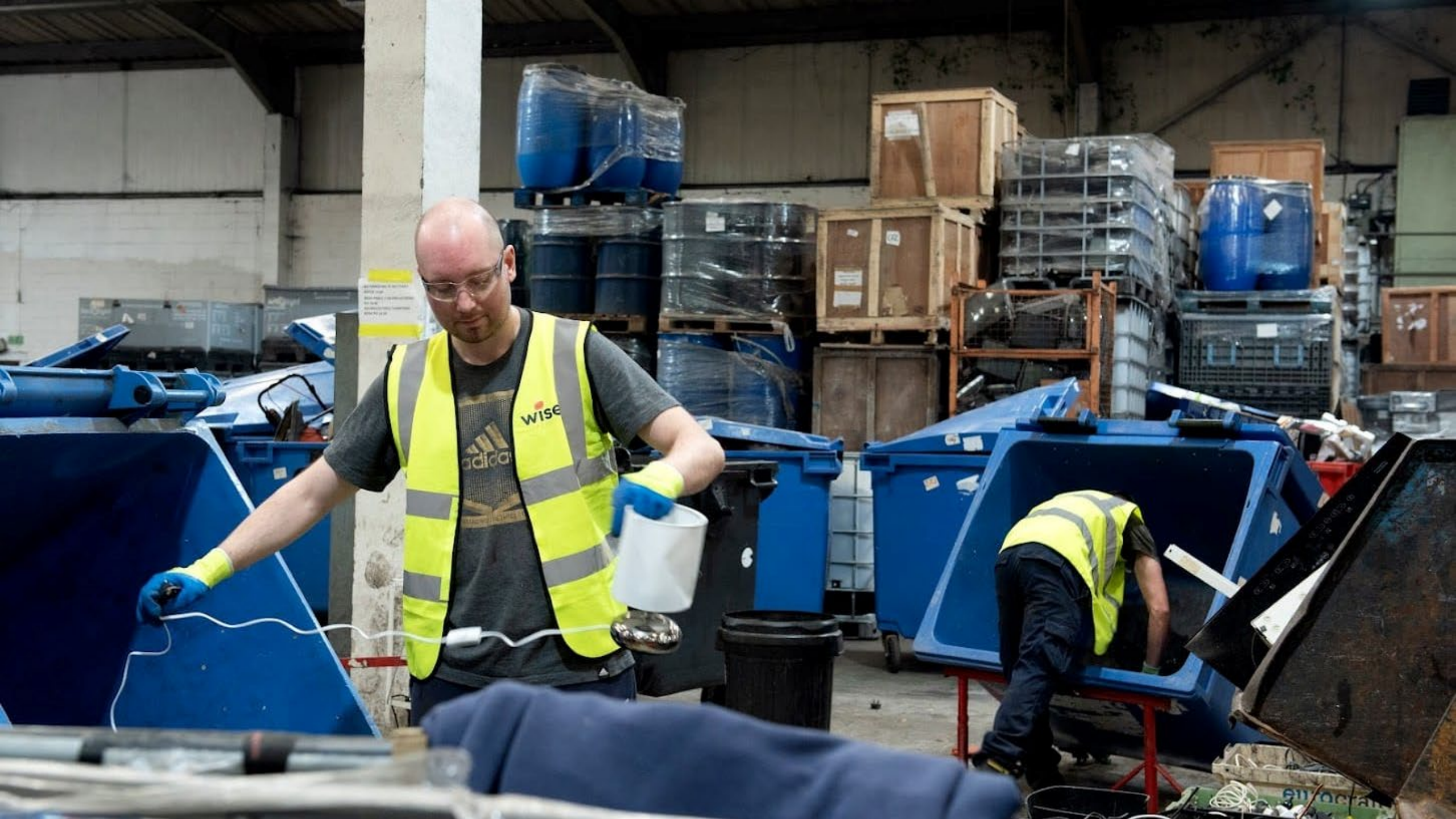
wiser environment Việt Nam

Employment and Economic Opportunities

- **WEEE Recycling Employment in the EU/UK**:
- Thousands employed in the collection, processing, and recycling of WEEE.
- **Current Statistics**:
- **Potential in Southeast Asia**:
- Significant job creation potential due to rapid EEE growth and limited recycling infrastructure.
- **Extrapolation**: Based on population and market size, SEA could create jobs in the WEEE recycling sector.
- **Economic Benefits**:
- Recovery of valuable materials boosts local economies and reduces reliance on raw material imports.



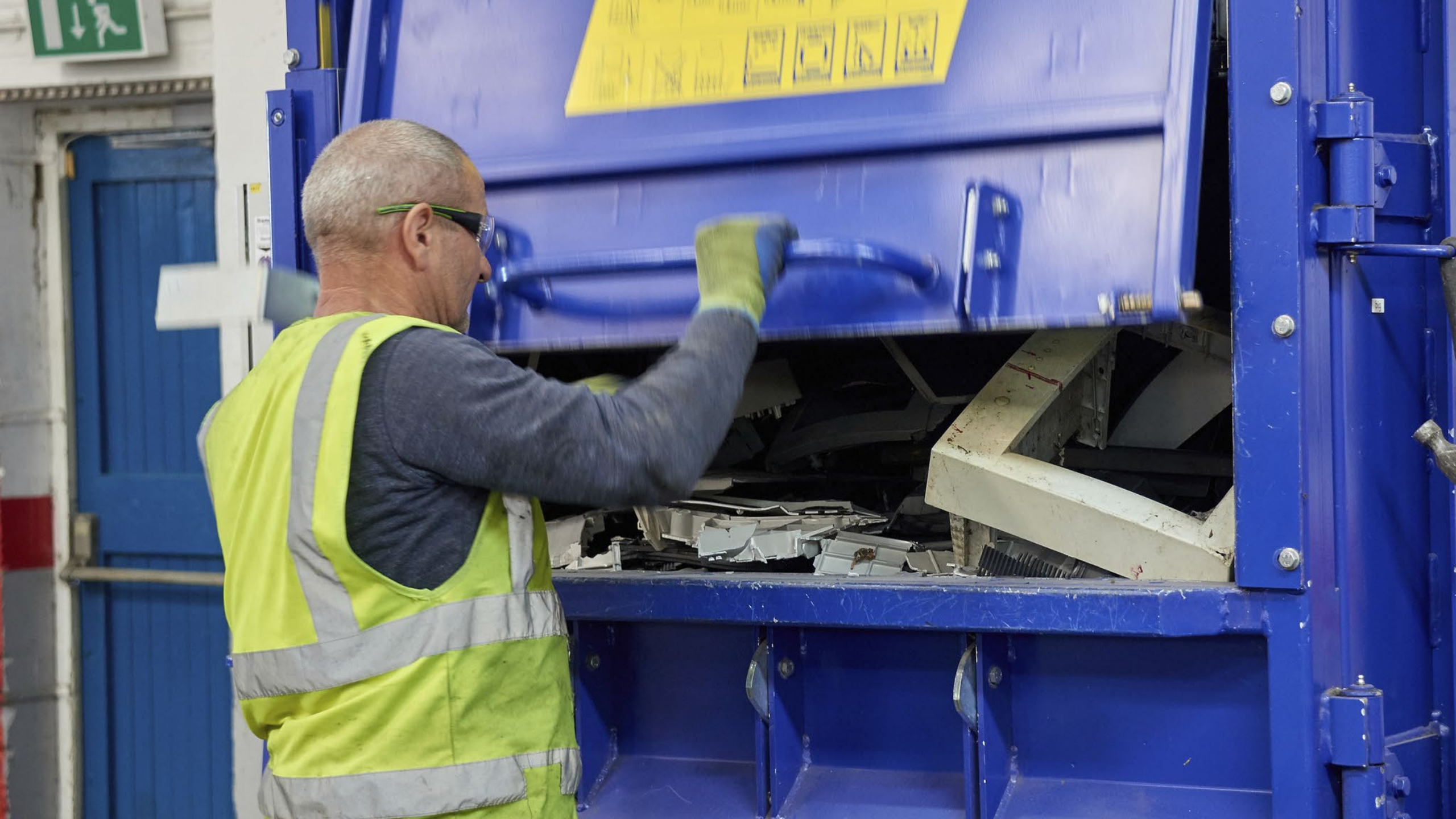
wiser environment Việt Nam


wise

WEEE Recycling Processes

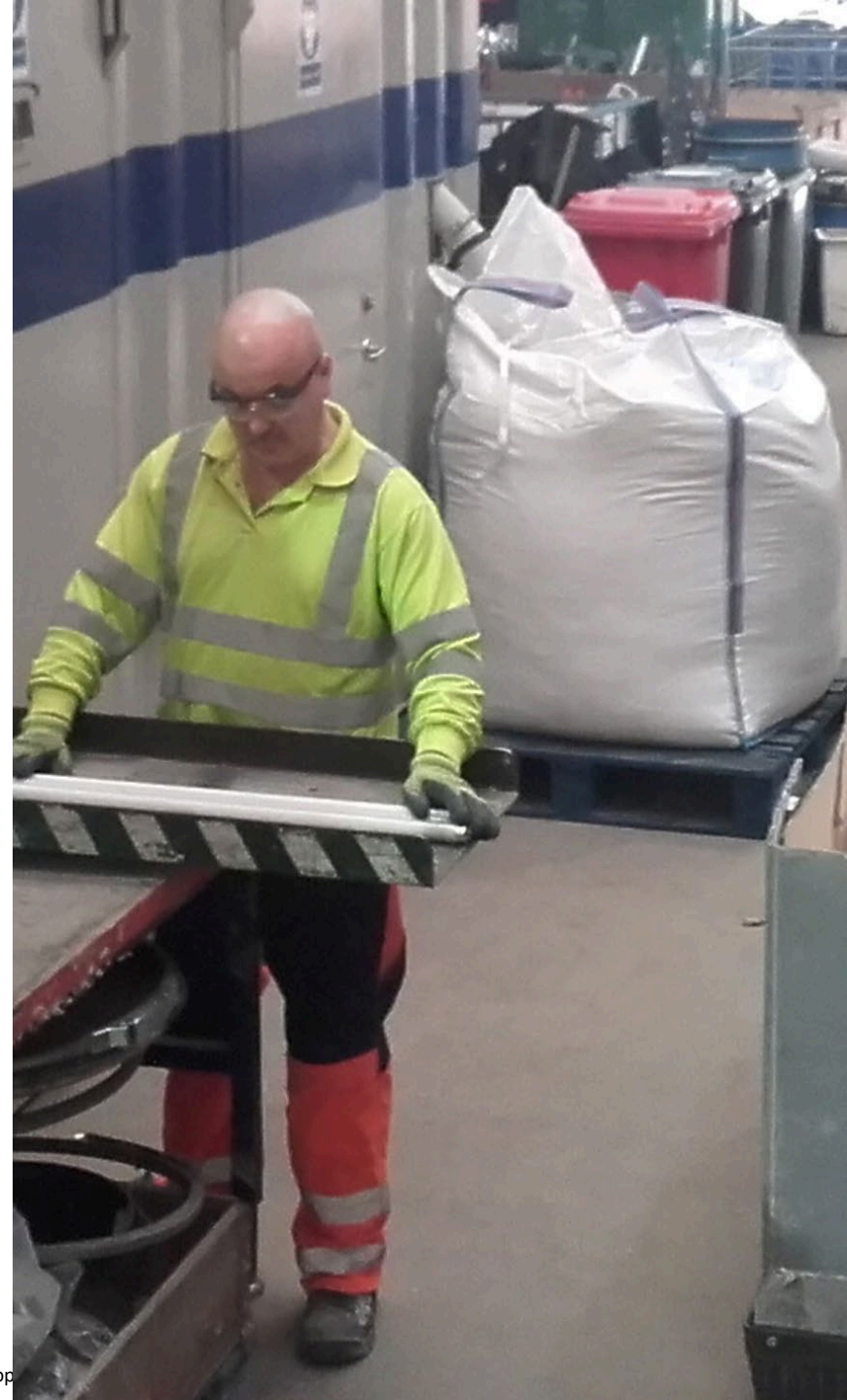
- **Manual Operations**:
  - **Dismantling by Hand**: Small-scale operations often rely on manual dismantling to recover components and materials such as metals and plastics.
  - **Labour-Intensive**: Suitable for regions with low labour costs but poses safety risks due to exposure to hazardous materials.
- **Mechanical Recycling**:
  - **Advanced Facilities**: Use shredders, magnetic separation, and other equipment to process large volumes efficiently.
  - **Examples**: Facilities like SWEEEP Kuusakoski and AO Recycling showcase state-of-the-art technologies for efficient processing.

wiser environment Việt Nam



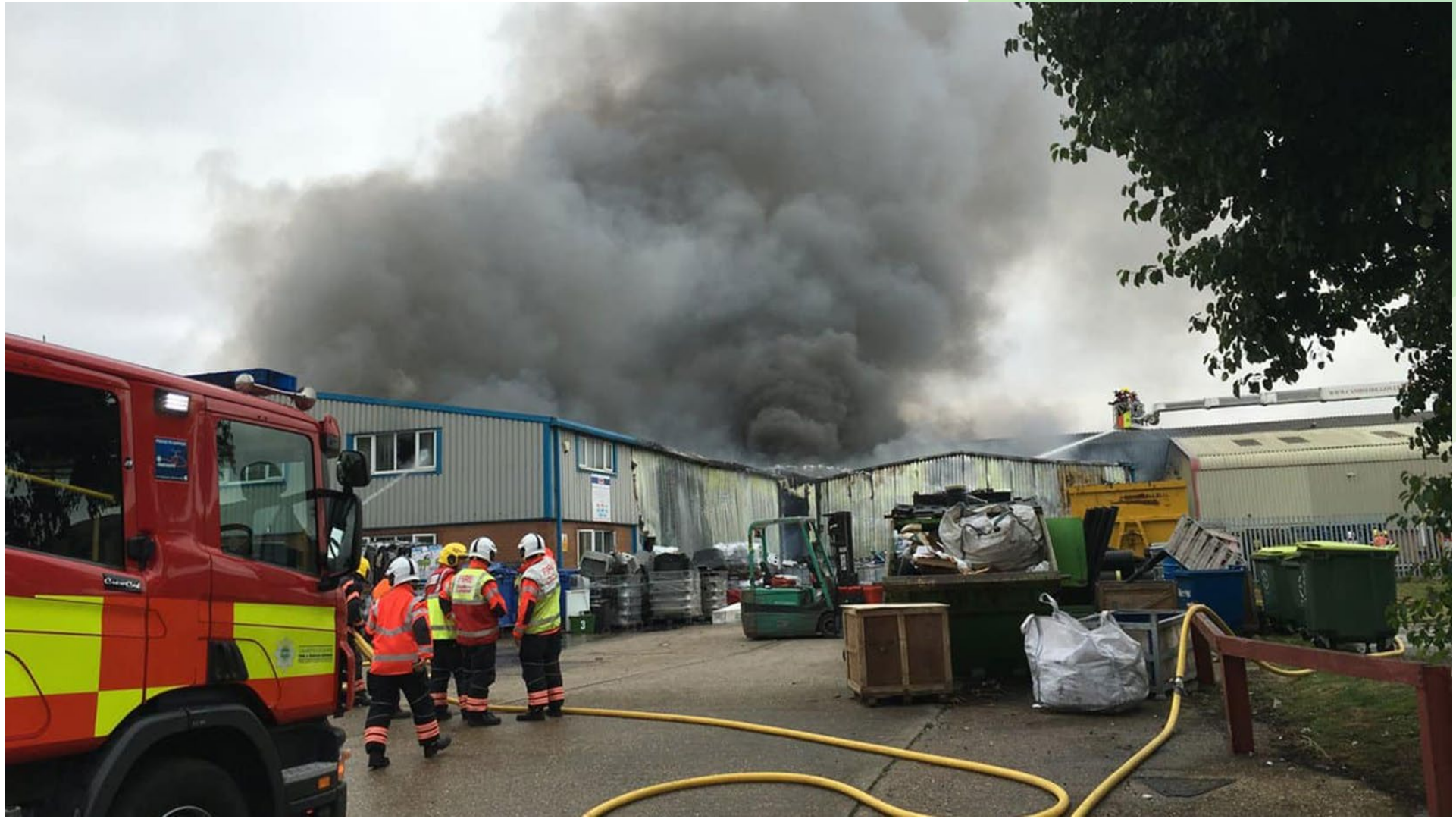
Environmental and Safety Considerations

- **Hazardous Components in WEEE**:
  - **Oils, Lead, Mercury, Cadmium**: Found in many WEEE items and pose environmental and health risks if not handled properly.
  - **Persistent Organic Pollutants (POPs)**: These can contaminate soil and water if improperly disposed of.
- **Safe Handling and Disposal**:
  - Proper containment and disposal practices are crucial for protecting workers and the environment.
- **Downstream Processing**:
  - Facilities must have systems in place for hazardous waste management, ensuring compliance with environmental standards.



wiser environment Việt Nam

Fire Risk



Challenges in Southeast Asia (SEA)

- **Lack of Infrastructure**:
  - Limited formal recycling facilities across the region.
  - High dependence on informal recycling sectors.
- **Regulatory Gaps**:
  - Weak or inconsistent e-waste legislation in many SEA countries.
  - Lack of clear Producer Responsibility frameworks compared to the EU/UK.
- **Public Awareness**:
  - Low awareness of proper e-waste disposal practices among consumers.
  - Informal disposal methods contribute to environmental hazards.
- **Data Gaps**:
  - Limited availability of accurate statistics on WEEE generation and recycling rates in SEA.

wiser environment Việt Nam

Recommendations and Next Steps

- **Policy Development**:
  - Advocate for implementing Producer Responsibility legislation in SEA, similar to the EU model.
- **Investment in Infrastructure**:
  - Develop large-scale formal recycling facilities.
  - Encourage public-private partnerships to finance sustainable WEEE management.
- **Public Awareness Campaigns**:
  - Educate consumers on proper e-waste disposal practices and the benefits of recycling.
- **Capacity Building**:
  - Establish training programmes to build a skilled workforce for the WEEE recycling sector.
- **Research and Data Collection**:
  - Improve systems for tracking EEE POM, WEEE generation, and recycling rates in SEA.

wiser environment Việt Nam

Conclusion

WEEE recycling in SEA holds immense potential for economic growth, job creation, and environmental benefits. Lessons from the EU/UK offer a clear path forward in developing policies, infrastructure, and awareness.

- **Key Takeaways**:
  - Significant value is lost due to improper WEEE disposal in SEA.
  - Implementing formal recycling systems and legislation is crucial for unlocking this value.
- **Call to Action**:
  - Collaborative efforts are needed from governments, industries, and communities to foster sustainable e-waste management in SEA.

wiser environment Việt Nam

Together, we can turn e-waste challenges into opportunities for a greener, more prosperous future

wiser environment Việt Nam

Thank You

Russell Hirst

Managing Director

russell@wisergroup.co.uk

+84 92152 3614