

**Strategic Materials for a Low-Carbon Future: From Scarcity to Availability**  
**2-3 November 2017 – Session Summary**

**Breakout 3d: E-waste policies to foster the circular economy**

Waste from electronic devices is predicted to increase dramatically due to consumption patterns of developed countries and the growing middle class of developing countries. How are developed and developing countries currently dealing with their e-waste, and how can e-waste be reinvented as a circular economy resource? How is China, the second largest consumer market in the world, tackling its e-waste compared to the US or Europe. What technologies already exist, and what is required for these technologies to be adopted at scale? How can we increase awareness of e-waste issues among consumers?

**Jonathan Perry**, Producer Responsibility Compliance Consultant, Dell

**Malcolm Waddell**, Delivery Manager – Electricals and Circular Business Models, WRAP (The Waste and Resources Action Programme)

**Xianlai Zeng**, Associate Professor of Environmental Science and Engineering, School of Environment, Tsinghua University

Moderator: Dabo Guan, Chair Professor in Climate Change Economics, School of International Development, University of East Anglia

- There are two primary resource availability challenges for e-waste: one, rapid innovation, meaning devices become out of date quickly, and two, a low concentration of critical materials in each device, meaning it's often not cost-efficient to recover those from a device.
- Dell has existing producer-responsibility programmes, especially for plastics: it works with Goodwill in the US and other recycling partners to collect devices to recover plastics. Perry said the supply chain in the US, without producer responsibility policies, is shorter than in Europe. Dell has also piloted programmes to recover ocean-bound plastics, and to refurbish and resell end-of-lease devices and devices from missing or damaged orders. It's already financially viable to do these.
- Malcolm Waddell of WRAP described pilot projects with partners to test the commercial viability of different critical-materials recovery technologies; the four-year programme ends in March 2019. Critical raw materials include gold, silver, cobalt, etc. Only 1% are actively recovered and can be used again. Across the EU, 24 tons of gold worth \$64m, ton of platinum, ton of silver at \$1m/ ton - there's a lot of value that's being thrown away.
- Xianlai Zeng described the evolution of recycling in China, from backyard recycling 20 years ago to more comprehensive producer responsibility policies in recent years.

- One challenge for producers and recyclers is culture - how to encourage greater consumer buy-in to product as service models?
- Another challenge is how to scale circular business models across competitors in an industry, to achieve economies of scale.

Finally, Zeng raised the need to look at a product's whole lifecycle - simply extending a product's life may not be the right answer, as older generations of products may be less energy-efficient.