



# Summary of Internet Waste Dialogue

Monday 19 October 2020, 15:00 - 16:30 CEST

English Only

## 1. Introduction

On 19 October, ITU and the WEEE Forum hosted a joint webinar, '[Internet Waste Dialogue](#)' in concurrence with International E-waste Day 2020 (14 October). The dialogue brought together panellists from across the supply chain – from manufacturers to end-of-life management specialists - to discuss the opportunities and challenges of end of life management of infrastructure equipment that enables our connectivity. The webinar provided an opportunity for experts to learn from one another in an area often less publically explored. The panel included:

- Ms. Jennifer Sanford, Director, International Trade & Environmental Policy in the Government Affairs Department, Cisco Systems, Washington, DC ([Biography](#))
- Ms. Lorraine Tew, Sustainability Manager, Cloud Supply Chain Sustainability Team, Microsoft, London ([Biography](#))
- Mr. Jelle Slenters, Head of Business Development EMEA, Sims Lifecycle Services, Amsterdam ([Biography](#))
- Mr. Patrick Hickey, R&D Adviser, Wisetek Solutions, Cork ([Biography](#))
- Mr. Gilles Dretsch, Corporate Social Responsibility Department, Orange Group ([Biography](#))
- Mr. René-Louis Perrier, President, Ecologic ([Biography](#))

Ms. Vanessa Gray, Head of the ITU Environment and Emergency Telecommunications Division, delivered the welcome remarks and Mr. Pascal Leroy, Director General of the WEEE Forum, moderated the session.

About 50 participants joined from across the world who were interested in the management of business-to-business infrastructure Waste Electronic and Electrical Equipment (WEEE), also known as e-waste, including from Member States, the private sector, international organisation and academia.

The dialogue explored some of the key findings from the joint ITU/WEEE Forum '[Internet Waste](#)' thought paper published on 12 October. This included challenges and opportunities of circular economy initiatives such as reuse, take-back and refurbishment of data center and mobile network infrastructure equipment. Panellists also explored what impact the Covid-19 pandemic is having on increased online connectivity, associated equipment use and future e-waste generation.

## 2. Opening and Welcome Remarks

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In addressing the participants, Mr. Pascal Leroy, Director General, WEEE Forum, noted that tackling connectivity infrastructure-related e-waste and reducing its environmental impact are key aspects of a sustainable and circular economy. He touched upon the uncertainties of what will happen to infrastructure and devices that enable connectivity at their end of life. Mr. Leroy noted that the ITU and WEEE Forum published a thought paper on the topic of '[Internet Waste](#)' for International E-waste Day 2020 that identified challenges related to equipment reuse and upgrading. He highlighted the importance of [International E-waste Day](#) as it aims to raise the public profile of e-waste recycling, where strong partnerships are key to achieving this. In addition, he added that, "There is a great deal of knowledge to be shared about this waste stream, with many companies having their own end-of-life guidelines and working internally to reduce their waste footprints."

In her welcome remarks, Ms. Vanessa Gray, Head of the ITU Environment and Emergency Telecommunications Division, noted the importance of digital infrastructure and reliable connectivity, especially during the Covid-19 health pandemic, but explained that this also comes with a growing carbon footprint. In her remarks, she explained ITU's broad range of activities on e-waste and highlighted the targets set by ITU Member States to increase the global e-waste recycling rate to 30% and raise the percentage of countries with an e-waste legislation to 50%. Ms. Gray then shared key findings and recommendations from the 'Internet Waste' thought paper, emphasising the importance of circular economy initiatives within industry such as equipment design, improving resource efficiency, and the impact of shortening lifespans and continuous upgrading of equipment on e-waste generation. She concluded by highlighting the importance of collaboration and coordination among stakeholders along the supply chain to improve sound environmental management of wireless infrastructure, data centres and IoT devices that enable connectivity.

## 3. Summary of Panellist Discussion on Internet Waste

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Mr. Leroy moderated the panel discussion that focused on waste originating from business infrastructure equipment such as data centres and networking equipment. A summary of key takeaways from the dialogue is presented below.

### 3.1. Industry initiatives for e-waste reduction for infrastructure equipment

Panellists shared some examples of initiatives within industry to reduce waste footprints related to infrastructure equipment:

Ms. Jennifer Sanford highlighted how Cisco is minimising their waste footprint largely through using and aspiring to use circular economy principles throughout their business. She also discussed how Cisco were a founding member of the Circular Economy Project of the Ellen MacArthur Foundation, and that achieving a circular economy is based on three principles: i) designing out waste and pollution; ii) keeping products and materials in use; and iii) regenerating natural systems. In terms of reducing Cisco's waste footprint, they focus on circular design, circular operation and circular consumption that includes decreasing virgin raw material use and increasing product modularity to allow greater swapping of components when they need fixed or upgraded. Ms. Sanford also highlighted how Cisco have a commitment to take-back 100% of all the products they place on the market and that they also take-back products from other manufacturers.

Ms. Lorraine Tew discussed how Microsoft have committed to becoming zero-waste in all operations by 2030 and have zero waste accreditation in their data centres. They have a new circular centres initiative – to be implemented in all Class A data centres – that will also ensure decoupling growth from consumption of finite resources. She also highlights the importance of creating more diverse reuse options, keeping products in use for the longest time possible, taking more control internally to innovate and maximise reuse options, as well as doing more component reuse externally, including partnering with IT Asset Disposition companies for remarketing server equipment.

Mr. Hickey described how Wisetek supports e-waste in terms of reverse logistics and IT Asset Disposition, noting that around 45% of products coming through their door are resellable.

Mr. Slenters discussed how Sims Recycling Solutions works closely with Original Equipment Manufacturers and Cloud Providers to prevent waste in their value chains. He discussed how recycling is important for repurposing older material back into the supply chain. Their company is trying to enable circular thinking and circular philosophies in the value supply chain.

Mr. Perrier highlighted how it is Ecologic's mission as a Producer Responsibility Organisation to collect and recycle e-waste. For example, they help set-up collection and treatment networks to ensure total compliance with regional and national e-waste legislation in France.

Mr. Dretsch explained how Orange group manage e-waste from mobile and fixed networks. They take a life-cycle assessment approach and comply with the new ITU-T L.1023 Recommendation regarding 'Assessment method for circular scoring'.

### 3.2. Differences between business-to-business (B2B) and business-to-consumer (B2C) equipment end-of-life management

Participants raised a number of points regarding the differences between business-to-business (B2B) and business-to-consumer (B2C) equipment end-of-life management, including:

- There is a more closed loop supply chain within the B2B infrastructure community. Producing, selling or leasing products to customers means a more manageable system for product reuse, recovery and disposition. As manufactures and owners of B2B infrastructure, there is a much stricter element of control over the closed loop, lifecycles and end-of-life management of infrastructure equipment for different repurposing stages.
- For B2C, despite some very effective returns programme, there is less control and visibility of equipment, which makes management considerably different compared to B2B. Whereas, it is easier to collect equipment within your own premises than in customers'.
- It is important to have effective, collaborative and diverse relationships with different companies that enable reverse logistics, sharing of data and to looking at ways to facilitate closed loops.
- The lifespan of consumer devices such as mobile phones is shortening, whereas the lifespan of telecommunication network equipment is much longer.

### 3.3. Shift to service-based and leasing business models for infrastructure equipment

Panellists discussed seeing a shift in business models across services that allow servitization and leasing of products. Service based models are growing at an increasing pace for Cloud systems, making up almost half the data storage landscape. Here, customers pay for the use of the service for compute and/or storage instead of purchasing or running their own hardware. In turn, leasing saves on the cost and maintenance of infrastructure.

Service models are an important enabler of infrastructure equipment optimisation, as well as energy efficiency. Large Cloud service providers are able to run data centres more efficiently using high percentages of renewable energy, establish effective and predictive maintenance programs, and run more high performing systems.

With the continued increase in Cloud infrastructure and transition to virtualization, this leads to greater solutions for smart products. In the long-term, there is an expectation to see an eventual reduction in data centre hardware waste, resulting in more effective closed loop models. Waste reduction will be helped further by the expected increase in circular designs of infrastructure equipment.

### 3.4. Challenges concerning reuse and recycling of infrastructure equipment

Panellists raised a number of challenges concerning the reuse and recycling of infrastructure equipment:

- Data sanitation can prevent the reuse of equipment. Customer data security is of paramount importance within the data centre industry, but equally important to IT Asset security and disposition companies who are managing products at end-of-life. Large hyperscale data centres often favour data destruction instead of erasure. It is important to understand whether companies can get confidence that technical features associated with data erasure would be good enough to guarantee data security. As products improve, new protocols and standards should be constantly evaluated. The discussion also highlighted that not everything that is destructed is always negative as long as the materials are recovered, they can be remanufactured for reuse and recycling.
- Infrastructure collection can be challenging in developing countries that have no legislation in place.
- Work is required within industry and policy to enable smart routing. In general, better collection is needed for equipment that reaches end-of-life, and companies should take back all products that they produce. Once collected, there is greater control and opportunity to route products to countries that have suitable infrastructure recycling capacity. Lessons can be learnt from companies that are already highly engaged with respect to reuse, recovery and recycling. For example, Ms. Sanders highlighted that less than a third of a percent of Cisco products ends in landfill, supported by close working with partners to get the number as low as possible.
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal are having discussions to amend the scope of the Annexes that could threaten the ability to reuse products. It is important that Governments are aware of the importance of reuse. Policies could be developed to enable greater reuse without compromising waste goals and proper disposal.
- A system is needed to enable supply and demand of complex products. The development of a global exchange with wish or wanted lists would allow supply and demand to be seen over elongated time.

### 3.5. Material tracing

Many products contain critical raw materials, which pose a supply risk as they come from a country that is dominant in that market and because they are economically important. It was highlighted that the electronics value chain is extremely complex due to many partners, and because of dependence on many other countries around the world. Panellists noted that:

- Chain-of-custody in IT Asset Disposition companies is important for item accounting as it ensures companies adhere to producer responsibility obligations. Customers increasingly want more data on what is happening to their materials in terms of traceability and what recyclers are getting out of products in terms of conversion efficiency.
- There is difficult in product tracking when crossing international borders. Exported infrastructure products often are not registered or reported. Very often equipment is unaccounted for, and therefore not part of statistics.

There is a growing impetus in industry to look at ways to enhance processes of traceability and transparency as ownership shifts as lifecycles are extended and equipment is repurposed. Panellists made some suggestions about how material tracing could be improved within infrastructure equipment:

- Development of a database where all critical raw materials in a product can be registered using Artificial Intelligence. Critical raw material sorting is not efficiently done compared to recycling for materials like copper, iron, gold and platinum. More data is needed on what the product is, and where and what proportion of critical raw materials are within the product. Closer working with producers and long-term investment will help determine how to best recover critical raw materials.
- Data digitalisation and data transparency are very important for asset management and developing closed loop models. It was highlighted that updating contract terms and conditions with IT Asset Disposition companies can help with material tracing to allow increased data sharing within value chains in terms of bills of materials and raw material declarations. This data can then be used to measure material circularity scores, which in turn, can then align with carbon score measurements.
- Developing digital passports and Blockchain to enable resource tracking and tracing. This will enable material data sharing as the product enters different lifecycles.
- Opportunity from a policy perspective to trace and track materials linked to the Extend Producer Responsibility principle. It was highlighted that if this became the responsibility of the original equipment manufacturer, they would be able to drive this throughout the value chain.
- Opportunity to join various internal informational systems together helped with technologies like Blockchain.

Such suggestions can offer positive outcomes in terms of environmental social governance, resource and material efficiency. With more data available, industry can better support reuse and recycling opportunities for products.

### 3.6. The 5G transition and expected e-waste impact

With the transition to 5G and the deployment of infrastructure equipment expected to occur slowly over the next decade, panellists discussed what plans are in place to deal with e-waste from this deployment.

Panellists highlighted that 5G will be deployed in parallel to existing generation equipment that will cohabitate for a long time. In Europe for example, 5G deployment will be conducted in two stages. Eventually, some of this equipment will become obsolete or older equipment may not function. There was mention about how it may become increasingly important for policy to confirm decommissioning of older technologies.

Discussion also highlighted opportunities for 4G equipment reuse in regions where the technology is still more common. However, balance is important as buying new generation equipment can mean better energy efficiency that affects carbon targets. In terms of product lifecycle, the use-phase has a high environmental impact, emphasising the importance of having a balance between energy efficiency and waste. There was also emphasis about the importance of 'future proofing' products to allow capacity to be added to equipment over time, for example, in terms of modularity.

### 3.7. Covid-19 pandemic, connectivity and e-waste

Panellists discussed ways in which future e-waste generation is expected to be impacted by the Covid-19 pandemic due to increased connectivity and changed the ways of working. It was highlighted that the pandemic has emphasised the need to have good and affordable infrastructure equipment, as well as reliable connectivity. Connectivity is becoming increasingly more relevant and imperative in our lives, including across wider groups of society of all age groups. It was highlight that this has been accelerated by the pandemic. It was noted that:

- The pandemic is expected to influence greater equipment reuse compared to recycling.
- The start of the pandemic saw an increase in demand from secondary markets for products as primary market sellers were having difficulty getting the required volumes of new laptops and desktops for people suddenly working at home. This will likely result in a latent amount of equipment that will enter back into the waste category once the pandemic goes away.
- The pandemic has provided an opportunity to become more circular with assets and components in terms of resilience and planning. This in turn links to climate resilience and risk mitigation as climate change predicts uncertain and volatile times ahead that would likely impact supply chains. Having an effective closed loop management strategy for assets, components, spares, repairs, upgrades and remanufacture decreases reliance on certain supply chain routes, reducing vulnerability during disruptive times.

## 4. Concluding Remarks

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The dialogue ended with some final concluding marks from each of the panellists. Mr. Leroy emphasized that there is still plenty of work ahead to ensure e-waste is handled responsibly and to tackle the challenges faced by this infrastructure waste stream. Panellists highlighted:

- There is progress on full material declaration from manufactures. There is a need for all component suppliers to provide detailed information.

- Equipment should be used for as long as possible but ensuring there is not additional environmental harm through reduced energy efficiency.
- There is a need to ensure that all actors in society know how to properly dispose of infrastructure equipment. There is an opportunity to work with producer responsibility organisations so no shortcuts are taken in terms of responsible recycling and data management security.
- Consumers increasingly want more sustainable and durable products.
- Improvements are needed on the way exported products are managed and tracked – it is important to ensure products intended for a second life are handled responsibly.
- There has been an increase in awareness of infrastructure waste in the industry, in ITU and other international organisations with Circular Economy initiatives, workgroups and papers. This momentum should be embraced as it provides numerous learning opportunities.
- There are challenges within some legislations but there are also great legislations such as the European Ecodesign Directive that links to data centre reuse and enabling remanufacturing. A combined push from Government and EU legislation in turn has a global impact, especially as many companies have global markets.