

**Date:** Wednesday 11th March  
**Time:** 10:00-15:30  
**Venue:** Large Boardroom, Queen Margaret University



[Website for Slides](#)

# The Lifecycle of Electronics

## Waste Management and Sustainable Procurement Topic Support Networks

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### Attendees:

Stephen	Connor	APUC Ltd	Procurement TSN Co-Convenor
Trudy	Cunningham	University of Dundee	Waste TSN Co-Convenor
Fleur	Ruckley	University of Edinburgh	Waste TSN Co-Convenor
Rebecca	Petford	EAUC	EAUC-S Programme Coordinator
Tracey-Ann	Don	University of Stirling	
Alison	Gallagher	CCL (North) Ltd	
Gillian	Gibson	EAUC	
LA	Hook	Scottish Government	
Tony	Kopsch	University of Stirling	
Fraser	Muir	University of Edinburgh	
Declan	Murray	University of Edinburgh	
Emma	Nicholson	APUC Ltd	
Alan	Peddie	University of Edinburgh	
George	Reid	University of Edinburgh	
Sophie	Rippinger	University of Edinburgh	
Caroline	Ryan	University of Edinburgh	
George	Sked	University of Edinburgh	
Sophie	Unwin	REMADE in Edinburgh	
Sandi	Whigham	University of Edinburgh	

### Apologies:

Karen	Bowman	University of Edinburgh	Procurement TSN Co-Convenor
Barbara	Aitken	University of St Andrews	
Willie	Dunn	MARC	
Kate	Fitzpatrick	SRUC	

1.	<p><b>Welcome and Introductions</b>  <i>Trudy Cunningham, Waste Management TSN Co-Convenor / University of Dundee</i></p> <p>Trudy welcomed everyone to Queen Margaret University and the meeting, and invited everyone to introduce themselves to the group.</p> <p>Potential for circular economy (CE) thinking in further and higher education (FHE) is growing, with schemes like WARPIT causing huge monetary savings, and realisation hitting that waste reduction means savings in landfill tax, transportation, administration and procurement costs, as well as production. Everyone is talking about CE ideas, but academics still don't seem to know much about it.</p>
2.	<p><b>Introducing the Topic – Electronics and the Circular Economy in FHE</b>  <i>Fleur Ruckley, Waste Management TSN Co-Convenor / University of Edinburgh</i></p> <p>Presentation available <a href="#">here</a>.</p> <ul style="list-style-type: none"> <li>• The University of Edinburgh (UoE) have been given some money by Zero Waste Scotland (ZWS) to look at what is being done in terms of CE within the UoE, and where there is potential for more activity. Generally people are doing it but don't know the term.</li> <li>• Idea is to move from a linear system with planned obsolescence using limited resources involving unstable parts of the world to something different</li> <li>• 10 years ago it was hard to find recycling routes, but now it is a lot easier with schemes like WARPIT. Standard is difficult to ensure – organisations need to be able to take items apart and fix or dispose of them.</li> <li>• In 10 years UoE has moved from 85% of waste to landfill to 85% diverted from landfill</li> <li>• Electronics are a good area to change first due to the high monetary value, high environmental cost, and quick turnover of products</li> </ul>
3.	<p><b>Discussion: Lifecycle Considerations at the Procurement Stage</b>  <i>Stephen Connor, Sustainable Procurement TSN Co-Convenor / APUC</i></p> <p>Discussion will focus on the procurement stage – what we need, what items do, their price, their whole life cost. What are people doing, or not doing, and what can the group do collectively?</p> <ul style="list-style-type: none"> <li>• Lifecycle costing at electronics is complex, but you can consider current disposal costs when procuring</li> <li>• Data rules for reselling hard drive are strict, with 3 wipes being needed in the UK and 7 in Germany due to the risk of important data being retained. Each machine has a risk/cost balance based on whether it was networked, the encryption on it, and what it was used for</li> <li>• Wiping is standard in the tech world but because of sensitive information in FHE often not seen as secure enough and hard drives are often destroyed to ensure no one accesses data</li> <li>• Need to consider non-data containing WEEE such as screens etc., and everything but the hard drive can be re-used</li> <li>• Need to factor in all costs, including costs of wiping at the end, to get a whole life cost. Uncertain whether energy costs during use are factored in at the procurement stage.</li> <li>• Some sustainable ICT options are possible during initial purchases but harder to apply during redesign, such as ThinClients and natural air cooling data centres at QMU.</li> <li>• Is cooling now considered at the procurement stage? Unanswered.</li> <li>• All mobile devices at UoE now encrypted by default so they are secure</li> <li>• Need a waste disposal service that will also take care of all data wiping etc.</li> <li>• Need to purchase items that can be dismantled for disposal or repair – but it's a question</li> </ul>

	<p>of cost and ease. How can we encourage suppliers to increase the modularity of products?</p> <ul style="list-style-type: none"> <li>• Technology is changing so fast with components that become redundant quickly (designed to assist capitalism) that the 10 year guarantee becomes obsolete.</li> <li>• Could you specify that the items that you want must be able to be upgraded? Difficult as an end user to change this, main influence that you have in during the tendering process.</li> <li>• Tendering process is usually dependant on institution. Suggested that the list of items that are available for purchase (e.g. in IT department) should be decided on by procurement teams or at least guide/work with the relevant department to suggest the most sustainable products. Though difficult if institution only have 2 year cycle.</li> <li>• GS gives example from University of Edinburgh where there is a 3 year cycle and devolved budgets, people start by buying new 'flashy' products then when budgets tighten people start to think about money and this is an area where it can be saved.</li> <li>• Substantial matrix or policy is needed to standardise what is needed, institutional or departmental-wide as it is difficult to engage with people on what they 'need' vs. 'want'</li> <li>• Idea of Bring Your Own Device suggested, however it is hard to enforce this policy, educate the users, monitor security and provide insurance that covers the university from reputational damage. Potential risks with data theft or misuse.</li> <li>• In some institutions if you wish to work from home the university will install a desktop for you rather than use your own devices.</li> <li>• Different approach suggested: is there any way on giving the incentive back to the manufacturer, or influencing them to make modular products? Is the Scottish Government able to do anything about this? Unanswered. Good examples of this come from Canon/Xerox printers and rubber tiles which are multifunctional and modular.</li> <li>• AG mentions that CCL North Ltd try to reuse the products as a whole first then recycle modular parts. The majority of the products they receive are recyclable but there has to be a decision on whether to dismantle for the recyclable parts then store the parts that aren't in case a process becomes available to recycle them in the future.</li> </ul>
<p>4.</p>	<p><b>Circular Economy Thinking</b>  <i>Colin Webster, Ellen McArthur Foundation (via Webex)</i></p> <p>Presentation available <a href="#">here</a>.</p> <ul style="list-style-type: none"> <li>• The Ellen McArthur Foundation is a charity that aims to accelerate the transition to a circular economy. Now around 4 years old, with economic report estimating an economic benefit of around US\$1 trillion of switching to a circular model.</li> <li>• Scottish Government was the first region to sign up to CE100, but the EU is working on the idea too, along with businesses and educational establishments of all sizes and levels.</li> <li>• The EMF has an online programme, including the Disruptive Innovation Festival which was a series of online and face-to-face events</li> <li>• It's about moving from a linear process with resource use, environmental degradation, volatile commodity prices etc.</li> <li>• Reducing resource use or making products more durable helps, but the mechanised system is still a linear one of take, make and dispose – world is too complex for this as are most of the systems within it</li> <li>• We should apply some of the characteristics in living systems – waste=food, celebrate abundance, diversity brings resilience, energy from renewables and think in systems (i.e. work in partnership) – need a paradigm shift from enlightenment to living systems thinking</li> <li>• Two cycles, biological materials which return to regenerate the biosphere and technical materials, which need produced so they can be used again at the highest quality</li> <li>• <a href="#">'Butterfly' diagram</a> has multiple loops, with the focus on the inner ones – more valuable for firms to make to maintain rather than recycle</li> <li>• Mobile phone example – currently 85% lost or landfilled, but if you change how you think</li> </ul>

	<p>about them so that remanufacture becomes possible, with energy, money and CO2 savings</p> <ul style="list-style-type: none"> <li>• Rethinking design so disassembly is possible, such as smart screws which lose their thread at a trigger temperature – company is <a href="#">Active Disassembly</a></li> <li>• Now is the time to act, with incoming regulation, the new consumer, investment opportunities and enabling technologies. There are four building blocks – radical design, innovative business models, cascades/reverse cycles, and cross-sector collaboration</li> <li>• Consumers and technology are changing to allow a model change from ownership to access, with services such as Netflix and Spotify, car clubs and schemes, people buying lumens rather than buying light fittings etc.</li> <li>• Technologies such as dissolvable circuit boards and ecovative packaging also helping</li> <li>• Stahel: ‘The goods of today are the resources of tomorrow at yesterday’s resource prices’</li> <li>• B&amp;Q Youth Board Project suggested lending fixing kits rather than selling tools people need once, which they have taken on board.</li> <li>• Don’t mitigate the negatives, instead take a regenerative approach.</li> </ul> <p>Questions and Comments</p> <ul style="list-style-type: none"> <li>• Where to start with FHE waste/procurement issues? Talk to ZWS for advice as they have a finger on the pulse</li> <li>• Public sector tends to buy and needs to lease/share more – e.g. exam desks</li> <li>• We are interconnected but work in silos – Muni-rent scheme in USA is trying to encourage sharing across municipalities</li> <li>• How does EMF aim to mainstream these ideas? CE100 programme is for firms to work together and discuss this between them – run cross-sector groups to investigate opportunities and pull people together to talk and collaborate. Don’t have to be ‘good’ to be part of the club – e.g. Apple are often criticised but are within CE100.</li> <li>• Common sense ideas and big companies are taking them on board – some like the business edge of ‘circular economy’ rather than ‘sustainability’.</li> <li>• Also saw a new term and ambition for existing practices - Renault have been remanufacturing for years but now see the value in selling mobility rather than cars and extending the value over time of materials used</li> <li>• Linear lock-in is due to suppliers, technology, shareholders, financial reporting, customer expectation etc, but businesses know it isn’t long term so are willing to work on CE</li> <li>• There will be a smallest cost remanufacture is viable for</li> <li>• Is this a global, local, or regional approach? Interesting examples of regional remanufacture, e.g. Reco in Japan remanufacture products within the EU in the UK, which has a higher labour cost but higher skills and lower transport costs</li> <li>• Additive manufacture (3D printing) rather than cutting out a shape and disposing of waste can save resources and be done anywhere with the machine and materials – ship the recipe rather than the ingredients around – can print anything from trinkets to buildings – could be a quality issue with products though!</li> </ul>
5.	<p><b>Ethical Procurement</b></p> <p><i>Jim Cranshaw, People and Planet (via Skype)</i></p> <p>Presentation available <a href="#">here</a>.</p> <ul style="list-style-type: none"> <li>• People and Planet (P&amp;P) are the UK representative for the EU-funded Electronics Watch (EW), who look at manufacturing, aiming for socially responsible public procurement</li> <li>• Many issues in the manufacturing stage, with P&amp;P students getting concerned after the Foxcon multiple suicides in China, who manufacture for major brands including Apple, Dell, and HP. Foxcon’s response was to create suicide traps to catch people, and update contracts so that suicide meant no family compensation would be paid.</li> <li>• Only one factory of many and not the worst – militaristic, long hours, poor treatment,</li> </ul>

	<p>repression of unions, dangerous chemicals and low wages</p> <ul style="list-style-type: none"> <li>• Happening in the supply chains of major brands, with public sector and FHE buying from these brands – the sector wouldn't want this happening in their supply chain and as 1/5 of computers bought in the UK by public sector this is an opportunity to influence standards</li> <li>• Buyers generally have an increased focus on the electronics industry</li> <li>• Verification and collaboration are missing in socially responsible ICT procurement, which means we are missing an opportunity for common leverage and a view of what's happening elsewhere in the supply chain</li> <li>• EW aims to support the European Public Sector by being the eyes and ears, creating a consortium and network for information gathering. This will identify common contract conditions and share monitoring among partners, lowering the cost to each.</li> <li>• Electronics Watch Code of Conduct includes the requirement for them to operate legally which is not always done, even for public sector suppliers</li> <li>• Due diligence requirements, timelines for improvements, factor-level improvement plans, and addressing root causes rather than symptoms</li> <li>• Now have 7 founding members with 70 European organisations considering affiliation. Founding members' affiliation scheme ends at the end of March. If you are interested sign up to the mailing list or get in touch.</li> <li>• Monitoring starts later this year, with many expected benefits.</li> </ul> <p>Questions and Comments</p> <ul style="list-style-type: none"> <li>• EW have not spoken to Crown Commercial Services who are the governmental procurement organisation and are at the top of the food chain, but this is a good idea</li> <li>• In terms of government lobbying there will be a focus on Scotland and Wales as things are likely to change there before the UK</li> <li>• Not currently looking at chains in remanufacturing and refurbishment, focusing on tiers 1 &amp; 2 (final assembly and assembly of components for final assembly) and then will look at other parts of the chain like tier 3 (assembly of components) and before (e.g. mining) and link to issues such as conflict minerals</li> <li>• EW activity is driven by who contracts are with</li> <li>• Health and safety at tier 1 and 2 are key to the work of EW</li> <li>• Affiliation cost is the cost of monitoring the supply chains, and is banded depending on spend on electronics. For universities (who will be band A) this will be 1% of spend or £5,000, whichever is lower, per year.</li> <li>• EW started by 7 European NGOs including P&amp;P, with development money given by the European Commission, and now the development of an advisory group.</li> </ul>
	<p><b>Networking Lunch and Tour of Queen Margaret University</b>  <i>Rebecca Petford, EAUC</i></p>
6.	<p><b>Video on the Lifecycle of Electronics at the University of Edinburgh</b>  <i>Fleur Ruckley, Waste Management TSN Co-Convenor / University of Edinburgh</i></p> <p>Find the video <a href="#">here</a>.</p>

<p>7.</p>	<p><b>Disposal and Reuse Considerations</b>  <i>Alison Gallacher, CCL (North) Ltd.</i></p> <p>Presentation available <a href="#">here</a>.</p> <ul style="list-style-type: none"> <li>• CCL are a recycler, but unique in that they do reuse, refurbishment and recycling, with the capability to collect 14 categories of WEEE.</li> <li>• Do all collections using their own fleet due to the data sensitivity of their collections, with drivers that are trained to inspect the potential of items and safely handle them</li> <li>• University of Edinburgh have given over 12,000 items and 130 tonnes of mixed electronics</li> <li>• Many items collected are data-bearing and need to be traceable, so a list of items is need in advance, and each item is given a unique job number</li> <li>• CCL do full data wiping and testing for reuse, or shredding to remove data before recycling, depending on the wishes of those disposing of the equipment.</li> <li>• What they do is environmentally and cost positive, as it is more valuable to reuse whole items or components. It diverts form landfill and increases jobs and recycle value.</li> <li>• Risks of recycling abroad including labour rights/protection and quality, as well as the risk of data leaks – often they don’t have the know-how or the tools.</li> <li>• Donations of computers abroad, such as Computers for Africa, often leads to unused equipment or unsafe use – follow the items to see where they end up</li> <li>• CCL sales are within the UK, meaning some take-back control if required and the value and jobs are kept here</li> <li>• Realities: lack of viable end markets, lack of willingness to buy second hand items, lack of awareness of legislation, reuse often focused on whole items rather than components, rogue traders</li> <li>• Visits to CCL in Irvine welcome – up to 20 people</li> <li>• Redevelopment of Waste Framework happening this year has WEEE as a schedule</li> </ul> <p>Questions and Comments</p> <ul style="list-style-type: none"> <li>• Products are triaged as soon as they come through the door to see what can be done</li> <li>• Some customers don’t allow re-use and just want devices and data-storage destroyed</li> <li>• Nothing goes to landfill</li> <li>• Shredding process to wipe data before recycling divides products into ferrous, non-ferrous and plastics</li> <li>• Licenced to process up to 4,000Tonnes by SEPA – rogue traders may have the wrong licence or operate under an exemption</li> <li>• Generally, electronics can be given to individuals but not organisations without a license</li> <li>• Each pick-up needs a separate paper form, and costs £15 when hazardous – high administrative costs</li> </ul>
<p>8.</p>	<p><b>Refurbishment and Re-Use: WARPIT and PC Cascading at the University of Edinburgh</b>  <i>Alan Peddie, University of Edinburgh</i></p> <p>Presentation available <a href="#">here</a>.</p> <ul style="list-style-type: none"> <li>• University of Edinburgh (UoE) is challenging for waste disposal as it has 42,000 people in departments all over Scotland and beyond, there is a constant focus on academic freedom, and there are different entities and structures in different places</li> <li>• WARPIT system is easy-to-use, similar to eBay, and well-supported by founder Daniel O’Connor. It tells you your savings in CO2, time, kg, money and money to charity. Easy to add stuff and customisable for institutions.</li> <li>• UoE have been using it for a year and a half so far, but didn’t put furniture on it as it can’t be delivered and restricted electrical items to non-data items and PAT tested only, so show</li> </ul>

	<p>slightly less savings than some institutions. An agreement for transport with cost is in place but is rarely used. It was piloted with 25 people but now has around 300 staff using it, promoted by internal emails and the waste website. Aim is to be cost-effective.</p> <ul style="list-style-type: none"> <li>• UoE work exclusively with British Heart Foundation to rehome items not wanted internally</li> <li>• Now started looking for a way to cascade PCs within the university, trying to lower both the purchase and disposal of PCs, which shows a trend of spiking when new Windows upgrades are released</li> <li>• Found 40 working PCs which had been forgotten and worked to develop a system</li> <li>• PCs have to be within 5 years of purchase and not held too much data (not from finance or HR, generally), and are wiped to a reasonable standard. They need to be required for individual use, and requested by a computer rep within a department who has the skills to set them up.</li> <li>• 25 of the 40 PCs were recovered, and 6 have been salvaged so far, with PC Cascading officially launched yesterday.</li> <li>• Also donating non-data devices (PCs without hard drive, keyboards and mice) to REMADE in Edinburgh for them to rehome – aim is to first promote a longer life for staff, then pass to third parties</li> </ul> <p>Questions and Comments</p> <ul style="list-style-type: none"> <li>• University of Dundee’s procurement and finance team took a year and a half to go through the WARPIT terms and conditions, and these have now been replicated and reconsidered at UoE – we might as well work together</li> <li>• Value of donations to a charity is huge, so deciding who to pass things to is a major choice.</li> </ul>
<p>9.</p>	<p><b>Refurbishment and Reuse: REMADE in Edinburgh</b>  <i>Sophie Unwin, REMADE in Edinburgh</i></p> <ul style="list-style-type: none"> <li>• REMADE in Edinburgh (RiE) is a campaign for reuse and supports the teaching and learning of skills for reuse within the community</li> <li>• Started in 2011 with £60, and now have 6 part time staff and a show, with systems for teaching, taking donations, and passing on</li> <li>• Society can seem to persecute people for making products that last, but it is possible to turn things around</li> <li>• Repair is the key and is much better than recycling for creating skilled jobs, but often repair doesn’t seem viable as it can be cheaper to buy new</li> <li>• Model at RiE is of repair education, where people pay to learn and be helped to repair things, usually at an affordable rate of £15-20 per hour.</li> <li>• RiE income last year was £60,000, half in business and half in grants, and they are trying to build up the business side so the campaigning side can continue</li> <li>• Want RiE to have a sense of building community – events have a storytelling element and people make friends</li> <li>• Looking at potential for replication elsewhere in the UK</li> <li>• Also considering social enterprise potential, as it is dispiriting to wait on the next grant. A Scottish Government Enterprise Ready Fund grant allowed development of their computer repair and resale side of things</li> <li>• Risk and perception of risk is the biggest barrier for organisations considering reuse of electronics – but there are bigger risks not doing it, such as environmental depletion.</li> </ul> <p>Story of Stuff’s Electronics Video – available <a href="#">here</a>.</p> <p>Questions and Comments</p> <ul style="list-style-type: none"> <li>• Need to encourage designers and companies to do product take-back and work on modular designs which are easier to repair/replace</li> </ul>

	<ul style="list-style-type: none"> <li>• Over 1,000 people are on the newsletter – people are keen to share ideas</li> <li>• Is this displacing repair businesses? RiE only teach repair and promote other repair businesses – it is a different business model</li> <li>• Good for personal computer repairs as well as donations from larger organisations</li> <li>• Visited Heriot-Watt University for drop-in sessions, where people were keen to stop by with electronics but less keen on learning sewing and mending</li> <li>• Do they do more than just computers? Need to focus on just a few waste streams to develop, and ZWS priorities are textiles, furniture and electronics, so decided to focus on textiles and electronics. Furniture next in partnership with Edinburgh Furniture Initiative.</li> </ul>
10.	<p><b>Refurbishment and Reuse – MARC (Midlothian Advice and Resource Centre)</b>  <i>Sophie Rippinger, University of Edinburgh</i></p> <p>Unfortunately Willie Dunn from MARC is unavailable, but some resources from him are available <a href="#">here</a>. Sophie will give a brief outline instead.</p> <ul style="list-style-type: none"> <li>• MARC is a reuse entity started after the miner’s strike, a community based Social Enterprise serving the people of Midlothian.</li> <li>• It is furniture and white goods recycling project based in Dalkeith, which collects, refurbishes and redistributes household goods within the local community.</li> <li>• They have a community shop based in Dalkeith where they sell recycled furniture and white goods (fridges, cookers and washing machines).</li> <li>• They focus on the social impact of white good reuse, and can be used to buy items with a community grant, either new or second hand, so if they go for second hand they will get more for their money.</li> <li>• All items are PAT and function tested, and more items are always needed.</li> </ul>
11.	<p><b>Summary and Discussion: Electronics and the Circular Economy in FHE</b>  <i>Fleur Ruckley, Waste Management TSN Co-Convenor / University of Edinburgh</i></p> <ul style="list-style-type: none"> <li>• Edinburgh University are trying to develop their in-house re-use market but also pull together partners to extend items’ useful life elsewhere if in-house isn’t possible</li> <li>• Behaviour change is the hardest thing – skipping is always a problem</li> <li>• Both APUC and UoE are signed up to Electronics Watch. More information can be found on <a href="#">their website</a>, and we have large buying-power as a sector.</li> <li>• Great that we have an open invitation to visit CCL (North) Ltd – an option for a future TSN?</li> <li>• A lot is going on with WARPIT in Scotland – feel free to <a href="#">contact Alan</a> if you want to know about WARPIT and PC Cascading at the UoE.</li> <li>• BBC Panorama Video on Conflict Minerals with a focus on Apple is great, looking at the full procurement cycle and issues addressed by Electronics Watch. Find it <a href="#">here</a>.</li> <li>• There are many training opportunities available, including <a href="#">Foundation Level Waste Smart Training</a> with the EAUC and the <a href="#">EAUC Conference</a>.</li> <li>• APUC’s SUSTAIN project looks at worker’s rights etc, but needs a whole session in itself to go through it.</li> <li>• Thanks to all who have presented and contributed. Our next TSNs will be in Autumn 2015. Please let us know if you have any ideas for speakers or topics to explore.</li> </ul>

Minutes prepared by: Rebecca Petford  
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March 2015