Productivity Commission: Right to Repair Inquiry
Submission by Green Industries SA

February 2021

ABOUT GREEN INDUSTRIES SA

Green Industries SA (GISA) is a South Australian government statutory authority with the role of an enabler and driver of change, supporting the development of the circular economy through diverse collaborations which improve productivity, resilience, resource efficiency and the environment.

GISA aims to transform how South Australians use and value resources. Its objectives under the *Green Industries SA Act 2004* are to:

- promote waste management practices that, as far as possible, eliminate waste or its consignment to landfill; and
- promote innovation and business activity in the waste management, resource recovery and green industry sectors, recognising these areas present valuable opportunities to contribute to the state's economic growth.

GISA has invested more than $162 million into the waste management and resource recovery industry over more than a decade. This has contributed to increased collection and reprocessing capacity, improved markets, and assisted the development of new products and skills. It has leveraged considerable investment in the state by industry and local government.

The waste management and resource recovery industry is a significant part of the South Australian economy. The state diverts more than 83% of the waste it generates from landfill and the industry has an annual turnover of around $1 billion, contributing more than $500 million to Gross State Product and employing about 4,800 people (directly and indirectly). The market value of the resources recovered each year is also considerable: in 2018-19 it was estimated to be $348 million.

South Australia has undertaken significant steps to facilitate this shift towards a circular economy. It requires continued effort to keep materials and resources in use, or 'circulating', for as long as possible, while creating local solutions to our waste and recycling issues and expanding the sector.

SOUTH AUSTRALIAN POLICY & REGULATORY CONTEXT

South Australia's Waste Strategy

The *Green Industries SA Act 2004* requires GISA to develop a waste strategy for the State at least every five years.

The most recent strategy – *South Australia's Waste Strategy 2020-2025*[1] - was released in December 2020. It has the objective of supporting South Australia's transition to a circular economy and making the state a national centre for reuse, remanufacturing, recycling and composting, achieving positive environmental outcomes while building local industry and creating business opportunities locally and overseas.

The impetus in the current strategy to move towards a circular economy reflects policy shifts occurring in other jurisdictions in Australia and globally, particularly in the European Union (EU), and also the ethos of the Sustainable Development Goals, in particular Goal 12: Sustainable Production and Consumption, but also Goal 13: Climate Action.

[1] www.greenindustries.sa.gov.au/sa-waste-strategy

Environment Protection Legislation

Whilst legal barriers pertaining to intellectual property (IP)/copyright and other factors that prevent repair do not usually fall under the auspices of environment agencies, there is scope for environmental regulation to influence these frameworks.

Since September 2013, electronic waste has been banned from direct landfill disposal across all of South Australia under the *Environment Protection (Waste to Resources) Policy 2010*[2].

Product Stewardship Schemes, including extended producer responsibility, are important policy tools that can be used to promote waste avoidance through eco-design and alternative business models such as the sharing economy, collaborative consumption, right to repair and product service systems.[3]

Current Australian Product Stewardship Schemes focus on end-of-life management of products via recycling and do not specifically address product design for durability, reparability, re-usability and recyclability. This is recognised in the most recent Australian Government *Review of the Product Stewardship Act 2011*.[4] The Review recommended "Broaden the objectives of the Act to include product design improvements related to durability, reparability, re-usability and recyclability" (Recommendation 8), which is supported in the Australian Government's response to the Review.

The newly enacted *Recycling and Waste Reduction Act 2020* also explicitly specifies in the objects of the Act the importance of developing a circular economy that maximises the continued use of products and waste material over their life cycle. Among others, the objects are to be achieved by encouraging and regulating manufacturers, importers, distributors, designers etc to take responsibility for products, including improving the durability, reparability and reusability of products.

Legislating product standards that require manufacturers to provide transparency to customers about a reasonably expected lifetime and degree of repairability of their product, and enshrining fair repair rights for goods which are demonstrably repairable during their functional life, would encourage more circular economic models.

Legislation that supports business models enabling consumers to purchase the service rather than the goods ('product as a service') may also circumvent a perceived lack of repair rights, as it would be the supplier of the service who would ultimately repair the product.

REPAIR AND THE CIRCULAR ECONOMY

Repair, along with other approaches that extend the useful life of products and slow the rate of new material consumption, is an integral element of a circular economy.

Repair Infrastructure

While GISA has mapped and developed a plan for the state's waste management and resource recovery infrastructure[5], an assessment of SA's formal and informal repair infrastructure across material/product types has not been undertaken by our agency (or anyone else, to our knowledge) as the agency's targets have historically been diversion of material from landfill at a product's perceived end-of-life. Mapping the repair sector is a topic for further research.

[2] www.epa.sa.gov.au/environmental_info/waste_recycling/disposing-waste
[3] https://ewastewatch.com.au/2019/04/09/making-product-stewardship-circular/
[4] https://www.environment.gov.au/protection/waste/publications/product-stewardship-act-review-report
[5] www.greenindustries.sa.gov.au/sa-waste-resource-recovery-infrastructure-plan

Formal Repair

As noted in the Issues Paper, the formal repair sector consists of 65,000+ small-medium enterprises and family owned businesses, as well as larger companies that offer repair services of their own products. Roughly two thirds of these businesses are automotive related, and the ABS data seems to have grouped 'repair' with 'maintenance services', so as per Information Request 4, a concerted mapping effort may be needed to give a true picture of the repair sector.

Informal Repair

The informal repair sector (which can be defined as repair undertaken without a financial transaction) consists of DIY fixers, repair cafes, men's sheds, community sheds, hackerspaces, and makerspaces. The motivations of such initiatives include reducing waste, saving money, conserving resources, social interaction (with physical and mental health benefits) and also pushing back against monopoly[6] on repair. The informal repair sector is more likely to ignore or bypass any legal frameworks or regulatory barriers to repair.

A 'right to repair' is not only the ability of consumers to have their products repaired at a competitive price by a repairer of their choice, but also the ability to repair things themselves through access to information, parts and tools, and product design which enables this.

REPAIR: GREEN INDUSTRIES SA CASE STUDIES

GISA offers two examples relating to repair in South Australia:

Case Study - Makerspace Adelaide

In 2018-19 the South Australian government, via GISA's *Shared Fabrication Spaces Grant Program*, provided $300,000 to SA Makers, enabling it to establish Makerspace Adelaide, a community based workshop, in the heart of the city centre[7].

Makerspaces can contribute to a circular economy by reducing resource consumption through shared access to equipment, along with the potential for expanding this more widely into the community through tool libraries. There are also opportunities for reusing and repairing/fixing things through initiatives such as repair cafes.

GISA's grant agreement with SA Makers required that the ethos of the space, in both its practice (fitout and operations) and programming (workshops, events, educational outreach) contributed to improving knowledge of circular economy principles and their application.

In September 2020 the Makerspace hosted a Circular Economy workshop[8], where a diverse range of participants from academia, business, social enterprise, design and the non-profit sector were invited to participate in a 'product teardown' of four material types: electronics, wood, plastic and textiles - as part of a broader conversation about the role of makerspaces in design, reuse, and repair[9]. In January 2021, Makerspace Adelaide launched the new monthly series of Adelaide Repair Cafe[10].

[6] www.ifixit.com/Manifesto
[7] https://makerspaceadelaide.org/ethos/circular-economy/
[8] www.youtube.com/watch?v=2VveAtLpzT8
[9] https://makerspaceadelaide.org/Measuring%20Circular%20Economy%20Impact%20at%20Makerspace%20Adelaide_Rawtec%20summary.pdf
[10] www.eventbrite.com.au/e/adelaide-repair-cafe-tickets-137211845323

Case Study - Domiciliary Equipment Service

In 2017, GISA commissioned a case study of the 'circular' provision and repair model of Domiciliary Equipment Service (DES), at the time a business unit of the South Australian Government Department of Human Services, which supplies a broad range of high quality assistive technology equipment to people in need [11].

This study analysed the performance of the DES service model against a standard government delivery of programs model, using a number of circular economy indicators, namely:

1. Relative life of equipment
2. Relative Intensity Of Use Of Equipment
3. End of Use Fate Of Equipment Materials
4. Lifecycle Cost to Deliver Assistive Technology

Under the DES model, estimated average number of uses per piece of equipment was estimated to be 8.1 compared to 1.1 uses under the standard equipment supply model, ie. the DES service model enabled the same bundle of equipment to be used by seven times as many clients. The average life of a piece of equipment was estimated to be 5.0 years under the DES service model compared with 2.7 years under the standard equipment supply model. For the same equipment budget, the DES service model delivered approximately $0.8 million annually in net benefits whilst servicing twice as many clients[12].

THE ROLE OF DESIGN AND CULTURE

The dialogue on 'right to repair' is sometimes limited in focus to legal and technical barriers, however there are also other factors in play, especially cultural. The desire for novelty, and the role of perceived obsolescence (ie. although an item still works perfectly, or may have been only damaged cosmetically, it is discarded for a newer one or different style) is a separate issue to planned obsolescence. The role of design, not just for physical durability, but 'emotionally durable design[13]' is also critical. There are also challenges with sustaining the desire to repair over replacement when someone has had an unsatisfactory repair or refurbishment experience.

Further, the 'right to repair' does not necessarily guarantee things will be repaired, and puts the onus on the consumer to act, rather than on the manufacturers to design a product which is not going to break down or wear out prematurely, or be designed to be able to be repaired.

INFORMATION REQUESTS

GISA considers that there are two overlapping issues in the Terms of Reference - the interest of Original Equipment Manufacturers (OEMs) in retaining control over and rights to the IP that enables or prevents repair, and the consumer and public interest of product longevity, resource conservation and carbon mitigation through durable design and cost-competitive, convenient, reliable repair.

Concerning the Commission's Information Requests, GISA has responded only to Information Requests 6, 7 and 8 that focus on e-waste and planned obsolescence as the ones most related to environment agencies. GISA does not have expertise or jurisdiction in the areas of IP and consumer law.

[11] www.greenindustries.sa.gov.au/domiciliary-equipment-service-circular-economy-in-action-in-south-australia
[12] The equipment services that this case study was based on have recently been contracted out to a non-government provider, however, the repair and re-use business model has been retained.
[13] www.appropedia.org/Emotionally_durable_design

INFORMATION REQUEST 6

a) What evidence is there of planned obsolescence in Australian product markets? Do concerns about planned obsolescence principally relate to premature failure of devices or in them being discarded still working when more attractive products enter the market?

This issue is difficult to prove; to parse out from other factors causing premature device failure; and to restrict to 'Australian' product markets, when so much of what we buy, or rely on for support, originates beyond national borders (ie. there may be no evidence specific for Australia, but there is evidence for such activity in other jurisdictions where the same products are sold).

One recent example where planned obsolescence relating to printer cartridges (also the subject of the first test case of the French law making the practice a crime[14]) was successfully challenged in Australia was in an August 2020 High Court case, where the court upheld an appeal ruling that manufacturer's patent rights do not override right to repair[15].

Concerns about planned obsolescence relate to premature failure of devices, or devices not operating to the original specification in a time period that is not considered good value for money. For example, a mobile phone that cannot run the latest version of software and therefore not able to operate the functions it was purchased for. This forces consumers to either seek repair, purchase a new model, or do without.

The discarding of working (or cosmetically damaged but functioning) items for newer models is 'perceived obsolescence'. Both result in e-waste, so both are a concern as the material impact is the same regardless of the cause. Perceived obsolescence is ostensibly a consumer choice, but this is also shaped in part by OEMs releasing new versions and models that they are aware will cause premature discarding of working products.

OEMs cannot be expected to provide operating system support for all of their devices indefinitely, and the increasing complexity of them also means there is more scope for things to go wrong, however this 'expiring device culture' also impacts on levels of e-waste generation[16].

> *A key challenge in assessing the effectiveness of measures that prevent planned obsolescence (or mitigate its effects) is determining the extent to which planned obsolescence is occurring, relative to other factors. A range of other considerations — aesthetics, function, miniaturisation and costs — might explain the inclusion of particular design features that make a product difficult to repair (such as a sleek shape and waterproof casing for a digital device).*

According to a 2016 study by a German environment agency, the lifespan of electronic goods is becoming shorter, with the number of defective appliances replaced within five years increasing from 3.5% in 2004 to 8.3% in 2013[17]. This study could not find evidence of planned obsolescence, however there was an identified increase in defective appliances, as distinct from consumers replacing working appliances because they desire a new model. Poor quality control may not fall under the definition of deliberately planned obsolescence, but it could be defined as a contributor to it.

[14] https://www.forbes.com/sites/davidschrieberg1/2017/09/26/landmark-french-lawsuit-attacks-epson-hp-canon-and-brother-for-planned-obsolescence/?sh=20a1ca521b36
[15] http://eresources.hcourt.gov.au/downloadPdf/2020/HCA/41
[16] https://theconversation.com/upgrade-rage-why-you-may-have-to-buy-a-new-device-whether-you-want-to-or-not-153105
[17] www.umweltbundesamt.de/en/press/pressinformation/lifetime-of-electrical-appliances-becoming-shorter

The role of design is critical - regardless of whether the obsolescence through inability to repair is a deliberate design decision, or happens as a result of designers being unaware of the impact of such decisions, the result is the same.

> *Design is also a mechanism to construct huge amounts of biases. You've intentionally focused the bias on the consumer to behave in a particular way. In the act of doing that, what liability does the designer hold in creating that behavioural bias?*
>
> *Indy Johar, Dark Matter Labs*

b) How can the Commission distinguish between planned product obsolescence and the natural evolution of products due to technological change and consumer demand?

The National Television and Computer Recycling Scheme (NTCRS) was established in 2011 and provides Australian households and small businesses free access to industry-funded collection and recycling services for televisions and computers including printers, computer parts and peripherals.

Currently, the reporting requirements used by e-waste collectors who are service providers under the NTCRS are (see 9. Traceability and Reporting [18]):

> *…the administrator of a co-regulatory arrangement must report annually in respect to recycling, exporting and contracted service providers. This includes reporting the following:*
>
> 1. *Details about recycling products.*
> 2. *Details about exporting products.*
> 3. *Details about contracted services (domestic and international).*
> 4. *Details about total weight of useable materials recovered and total weight of non-useable materials sent to landfill.*
>
> *This does not currently include traceability to final disposition or full downstream processing.*

The information that could determine the 'split' of working vs non-working e-waste discarded may or may not be being gathered as part of the first two dot points above.

In order to distinguish between planned obsolescence and perceived obsolescence, e-waste collectors would need to be cataloguing this information as materials are accepted ie. what is working (discarded while still useful) vs what is not working (item less than x years old) and what is not working (item is more than x years old). It may be difficult to differentiate the prematurely dead devices without knowing their year of manufacture, though it would be possible to estimate. The 'non-useable materials' means the waste generated as a result of extracting and capturing components (glass, plastic, gold, metals), not non-working equipment.

c) How does planned obsolescence affect repairers, consumers and the broader community in Australia?

Planned obsolescence costs consumers, who are more likely to replace an item that is no longer working than repair it (thus displacing the business that repairers may otherwise have). It costs the broader community in terms of resources which are expended on managing e-waste. And it costs the global community (both now and future generations) through unnecessary demand for resources and use of energy in creating the new, rather than maintaining the already-made.

[18] https://www.environment.gov.au/system/files/resources/3caf6a8e-48b8-4701-aa85-e3a8d8e43c1a/files/material-recovery-measurement-reporting-methodology.pdf

Depending on how a 'right to repair' approach is designed and implemented, it could open up or enhance opportunities for local SMEs to participate in the repair aspect of a circular economy. It may affect levels of convenience and cost, but these can be addressed through policy and regulatory levers eg. the tax subsidies for repair adopted by several EU countries cited in the Issues Paper.

d) What measures do governments currently use to prevent planned obsolescence or mitigate its effects (in Australia and overseas)? How effective are these measures?

Although products and services carry warranties, and the Australian Competition and Consumer Commission offers some protection to people from goods that do not perform as described after a reasonable time[19], we are unaware of any governments using measures to prevent - as distinct from mitigating and managing the e-waste impacts arising from - planned obsolescence. The French laws explicitly banning planned obsolescence noted in the Issues Paper is the first time planned obsolescence has been acknowledged in statutes.

Although there is no reference to 'repair', 'planned obsolescence' or 'e-waste' in the *Recycling and Waste Reduction Act 2020*, the objectives of the act are intended to encourage and regulate the design of products under a tiered product stewardship approach (from voluntary to mandatory):

> *(c) encouraging and regulating manufacturers, importers, distributors, designers and other persons to take responsibility for products, including by taking action that relates to:*
> *(i) reducing or avoiding generating waste through improvements in product design; and*
> *(ii) improving the durability, reparability and reusability of products; and*
> *(iii) managing products throughout their life cycle.*[20]

As governments progressively pursue circular economy objectives, more policy proposals and legal requirements to address device failure and barriers to repair, including in how products are designed, can be expected.

Consumer advocacy organisation Consumers International are working with the UN and the French government on a programme of consumer information, including a number of policy actions and industry recommendations:

- a law against planned obsolescence
- minimum durability criteria
- product lifetime labelling
- affordable and accessible repairs
- Right to Repair legislation
- consumer education and information

According to several sources[21],[22] there are no laws in the US preventing planned obsolescence, however there are provisions to enforce durability standards, and governments can impose mandated warranties for products that requires them to last longer (eg. seatbelts).

[19] www.accc.gov.au/consumers/consumer-rights-guarantees/repair-replace-refund; www.accc.gov.au/consumers/consumer-rights-guarantees/consumer-guarantees; www.accc.gov.au/consumers/consumer-rights-guarantees/warranties;

[20] https://parlinfo.aph.gov.au/parlInfo/download/legislation/bills/r6573_aspassed/toc_pdf/20096b01.pdf;fileType=application%2Fpdf

[21] https://blogs.nicholas.duke.edu/env212/us-e-waste-and-planned-obsolescence-by-elizabeth-lamb/

[22] www.hg.org/legal-articles/planned-obsolescence-should-be-an-offense-punishable-like-any-deception-33946

e) What are the benefits, costs and risks of Australia adopting measures similar to those currently used overseas, such as product design standards and reparability ratings?

Consumers would benefit from not needing to replace devices as often due to failure, because they have information at the point of purchase on the likely lifespan of a product, and/or products that are built to be more durable and can make an informed choice. It would create a competitive market for goods that are made to last, as quality becomes more of a selling point when consumers can identify products that will last or can be repaired making transparency a market advantage, driving product design in the right direction instead of the lowest cost product.

Where products do fail, consumers will be able to access affordable and convenient repair from a provider of their choice. With the right mix of incentives, regulation and public information, a repair sector that supports livelihoods in Australia could flourish. The rate of e-waste generation, and financial and environmental costs associated with it, would slow.

Reducing the consumption of resources and energy associated with short-lived products is going to be an ongoing government policy objective internationally[23]:

> *The European Commission has recently published its Circular Economy Action Plan. The plan announces an intention to revise consumer law to ensure consumers receive trustworthy and relevant information on products at the point of sale, including on lifespan and reparability. It will also consider strengthening consumer protection against premature obsolescence, and will work towards establishing a new "right to repair". Electronics and ICT are identified as a key area: electronics and ICT will be a priority sector for implementing the "right to repair", including a right to update obsolete software. Regulatory measures are planned for electronics and ICT under the Ecodesign Directive so that devices are designed for energy efficiency and durability, reparability, upgradability, maintenance, reuse and recycling.*

Any associated risks eg. who repairs devices need to be addressed, however a system of accreditation would ameliorate this.

f) Do consumers have access to good information about durability and reparability when making purchases? If not, how could access to information be improved?

In Australia, no. There is no 'repairability' rating system equivalent to an energy or water star rating system on products to inform consumers about how easy or not a product is to repair. There is also no requirement to make available repair manuals or other knowledge that would enable repair as an affordable or do-able option.

INFORMATION REQUEST 7

a) What data are available on the amount of e-waste generated in Australia?

In addition to the data cited in the Issues Paper, and in the Waste Account Australia from the Australian Bureau of Statistics, each year, GISA commissions an independent study into recycling activity in South Australia. The report for 2018-19 was recently published[24], revealing the total of recovered e-waste was 5,200 tonnes, a 16% increase from the previous year. Waste is measured in weight, therefore it may not be indicative of numbers of items, as TVs and computers are the bulk of e-waste, and older TVs and computers are heavier by weight.

[23] www.lexology.com/library/detail.aspx?g=463c3580-1dfc-48b4-b57c-159b147b4708
[24] www.greenindustries.sa.gov.au/_literature_208535/Recycling_Activity_in_South_Australia_2018-19

• What data is there on the composition of e-waste in terms of particular materials (such as hazardous materials) by product type?

Information on what is going into each of many types of products at the design/manufacturing stage would need to be gathered, as there are many types of e-waste (consumer/entertainment electronics, ICT electronics, whitegoods, small appliances). In the EU, legislation restricts the use of hazardous substances in electrical and electronic equipment. The legislation requires heavy metals such as lead, mercury, cadmium, and hexavalent chromium and flame retardants such as polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE) to be substituted by safer alternatives[25].

• How does hazardous e-waste compare to hazardous general waste in its prevalence and risks? Is there merit in distinguishing between hazardous e-waste and non-hazardous e-waste? And if so, how could this be done in practice?

E-waste is one of the fastest growing waste streams, both in Australia and globally [26],[27], and it is a more problematic waste stream than other hazardous wastes - for example, light globes, solvents or batteries - because of the complexity of disassembly required in order to recover materials and precious metals (often labour intensive) from e-waste, and because of the presence of hazardous compounds.

Under South Australian legislation, there is no distinction between hazardous e-waste and non-hazardous e-waste. All e-waste is banned from direct disposal to landfill, including appliances, whitegoods and toys[28].

b) What estimates are available on the costs of e-waste disposal on the environment, human health and social amenity, in Australia and internationally?

There may be some more detailed estimates on the environmental, health and social impacts of e-waste disposal in receiving nations available through the Basel Action Network[29]. Work health and safety reports from collectors and processors may offer some insight into impacts on human health associated with processing in Australia. Environment Protection Authorities in each state may have information on incidents related to e-waste and environmental harm.

Annual reports from approved co-regulatory arrangements under the NTCRS will provide information on companies' collection and recycling activities and associated quantity and costs.

Although there is a concern with e-waste and environmental harm it may cause at the end of life from hazardous substances, and there are moves internationally to remove these hazards from electronic equipment, e-waste will remain a concern because of the loss of various materials, precious metals and rare earth metals along with embodied energy in electronic products. The depletion and draw down of this natural capital has intergenerational costs and impacts.

• How do the impacts differ by disposal type, or by the type of product or hazardous material?

There are a wide variety of impacts on human health and the environment, depending on disposal pathways, which may include illegally to landfill, illegal export, or recycling (which may be manual disassembly, shredding, chemical and/or smelting processes).

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[25] https://ec.europa.eu/commission/presscorner/detail/en/IP_11_912

[26] www.abs.gov.au/ausstats/abs@.nsf/Products/4602.0.55.005~2013~Main+Features~Electronic+and+Electrical+Waste

[27] https://theconversation.com/global-electronic-waste-up-21-in-five-years-and-recycling-isnt-keeping-up-141997

[28] www.epa.sa.gov.au/environmental_info/waste_recycling/disposing-waste

[29] www.ban.org/trash-transparency

GISA does not have specific information on these impacts and approved co-regulatory arrangements under the NTCRS may have more available information on this question.

c) How much of Australia's e-waste is shipped overseas for recycling? Is there evidence of circumstances where this creates problems for recipient countries?

E-waste is shipped to and from Australia both legally, under permit, and illegally[30].
Data on the export of hazardous waste (of which e-waste is a subset) is reasonably easy to obtain from the Federal Department of Agriculture, Water and the Environment, which administers the *Hazardous Waste (Regulation of Exports and Imports) Act 1989*.

Despite being comprised of hazardous elements, functioning electronic equipment is not defined as 'hazardous'[31] under the Federal act which governs its import and export:

> *hazardous waste means:*
>
> *(a) waste prescribed by the regulations, where the waste has any of the characteristics mentioned in Annex III to the Basel Convention; or*
> *(b) wastes covered by paragraph 1(a) of Article 1 of the Basel Convention;*

The Act in turn references the text of the Basel Convention:[32]

> *ANNEX VIII List A: A1180 Waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCBcapacitors, or contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they possess any of the characteristics contained in Annex III (note the related entry on list B B1110).*

The Basel Action Network (BAN), cited on page 23 of the Issues Paper, has undertaken several investigations into the end disposal pathways of electronic equipment in countries including China and Nigeria. An indication of illegal e-waste activity can be found in the *Illegal Export of e-Waste from Australia: A story as told by GPS trackers* BAN report[33].

> *Historically, Australia has not deemed e-waste items destined for reuse, or repair and refurbishment with the intention of reuse overseas, to be hazardous waste. Therefore these materials did not require an export or import permit. E-waste in its intact form has either been expressly regulated as non-hazardous (such as in Qld regulations) or has not triggered contaminant thresholds due to the overall weight of the item and the low concentrations of contaminants such as heavy metals. Dismantled e-waste components such as printed circuit boards, disk drives, or cathode ray tube glass, on the other hand, are commonly determined to be hazardous waste on account of the higher concentration of these contaminants in the dismantled material. Domestically as well, e-waste in its various intact end of life item form has not been subject to tracking as hazardous waste.*

Although not deemed 'hazardous waste' while still intact, electronic equipment always reaches an end of life at some point, whereupon the equipment is broken up for parts and precious metals, then rendering it as e-waste, and - particularly if exported to a location with insufficient or non-existent environment and workplace safety laws - ends up in a location which may not have the infrastructure or resources to safely and properly manage it.

[30] www.totalgreenrecycling.com.au/my_uploads/2019/01/REPORT-E-Waste-2018.pdf
[31] www.environment.gov.au/system/files/resources/b4335773-4e09-4d87-8648-592b2b94d2d9/files/hazardous-waste-australia-2019.pdf
[32] www.basel.int/Portals/4/Basel%20Convention/docs/text/BaselConventionText-e.pdf
[33] http://wiki.ban.org/images/archive/7/7c/20180815154710!Australian_e-Waste_Report_-_2018.pdf

There is overwhelming evidence that exporting 'non hazardous' e-waste creates problems in some recipient countries - two such examples, China and Nigeria:

- Exporting Harm: The High Tech Trashing of Asia (Guiyu, China - Basel Action Network investigation, 2002)
- The Digital Dump: Exporting Reuse and Abuse to Africa (Lagos, Nigeria - Basel Action Network investigation 2005)[34]

The Inquiry could investigate the recycling capabilities or investment requirements of existing industrial scale metal processing assets within Australia, including South Australia which has large smelters in Port Pirie (a polymetallic smelter) and Whyalla, that could form part of an on-shore solution for e-waste.

• Are there barriers to the expansion of domestic recycling facilities or the adoption of new recycling technologies in Australia (such as plasma arc incinerators)?

There are existing domestic e-waste recycling facilities, so the only barriers to managing an increase in e-waste is funding, appropriately sited land and a skilled workforce, assuming end markets are available for recovered materials.

The polymetallic smelter at Port Pirie, owned and operated by Nyrstar, is illustrative of South Australia's existing role in industrial scale metals processing that already process some e-waste components (e.g. CRT screens) and are well positioned to be essential contributors to e-waste management in Australia.

d) What are Australia's current policy settings for managing the potential environmental and health effects of e-waste (such as landfill bans, the National Television and Computer Recycling Scheme or Mobile Muster)? Are these policy settings broadly right — that is, are they proportional to the impacts of e-waste on the community?

The environmental policy settings are broadly right. Where Product Stewardship arrangements are developed, they should be mandatory or co-regulatory not voluntary, to create an equitable playing field.

Although compared to the volume of materials people use and discard every day (such as cardboard and plastic packaging and containers) the rate of e-waste throughput is slower. However, it has a disproportionate impact compared to its percentage of the waste stream. Computers and other electronics often incorporate heavy metals and other contaminants such as flame retardant, and unless carefully disassembled in a proper process, can become hazardous to human health and the environment.

e) How can a right to repair policy further reduce the net costs of e-waste in Australia, and would such an approach be an effective and efficient means of addressing the costs of e-waste to the community?

All electronic equipment will eventually reach end-of-life, even if refurbished or repaired numerous times. A right to repair policy, along with supporting communications and awareness campaigns, could help keep materials and equipment circulating longer, and displace the need for new or replacement equipment, with the consequent draw on materials, rare earth metals and carbon.

Repair is higher on the waste management hierarchy than recycling, as the repair of what has already been made, rather than recycling the parts and then creating resource demands for a replacement, is both more material and energy efficient.

[34] https://www.ban.org/watch-films; https://en.wikipedia.org/wiki/Electronic_waste_in_Guiyu

The net cost to Australia of disposing of e-waste, rather than repairing where possible, needs to factor in:

- costs of managing e-waste drop off facilities, and transporting equipment to them, and from them to processors
- costs of remediation to land and water where e-waste has contributed to environmental harm through improper disposal upstream
- costs of increased requirement for materials and energy to produce new equipment, which are not all borne by Australia, though some do affect the global commons (increased C02 emissions)

Any increased cost to the consumer, to business or to governments must be considered in conjunction with the 'unfunded' costs of lost embedded energy, materials and rare earth metals, as well as waste disposal.

INFORMATION REQUEST 8

a) What policy reforms or suite of policies (if any) are necessary to facilitate a 'right to repair' in Australia?

The Issues Paper has identified many, including consumer law, and amendments to copyright law to allow access to information that can enable repair, to the standards and policies adopted overseas in Table 1 of the paper. Product Stewardship Scheme and extended producers responsibility can have a role to play too.

b) Are there any other barriers to repair and/or policy responses that the Commission should consider?

Aside from legal or copyright barriers to repair, other barriers include:

- access to product specific information at point of sale – not just information on the ability of a product to be repaired, but also that a consumer right to repair exists, and how to avail of it
- the time and ability required to sourcing repair that is cost effective
- whether the repair fails, costing the consumer more and discouraging further attempts to repair
- whether repairs void warranties on other parts of the equipment

c) What are the costs and the benefits of the various policy responses that have been proposed to facilitate repair (such as those outlined in table 1)?

The EU Ecodesign Directive and French and Swedish policies in Table 1 set standards which Australia could readily emulate, or rather require products imported and sold here to meet.

The costs and benefits are a question for the jurisdictions that have implemented these policies, and whether they undertook any modelling ahead of implementing those responses, or have done any evaluation since.

However any increased cost to the consumer, to business or to governments must be considered in balancing out the 'unfunded' costs of lost embedded energy, materials and rare earth metals, and environmental harm wherever it may occur at end of life.

d) Are there other international policy measures or proposals that the Commission should consider as part of this inquiry?

Prevention of premature or planned obsolescence stems back to design, and the vast majority of electronic products are not designed or manufactured in Australia.

Product standards should be applied to all imported products that require a suite of eco-design features, including design for disassembly and ease of repair (eg. easily openable, no parts glued in, no special tools needed), and design for durability.

If products don't meet those standards, financial measures which support e-waste collection and processing in Australia should be considered.

Repair can be supported by requiring OEMs to make manuals, spare parts design and repair information freely available for those able to DIY, and as a means of supporting local repair services. Even long after an OEM is not fabricating spare parts, there is more than sufficient capability, equipment and skills in communities for these items to be produced on demand[35], if the design is available, or can be replicated.

There is a functional hierarchy in terms of priorities which 'balancing competing interests' does not reflect. The resource use, carbon and waste issues facing the world, and the associated economic and environmental costs and risks, are such that these must take priority, and a new way of ensuring OEMs' interests are satisfied within that is identified and developed.

New questions are needed - not 'what are the barriers to repair?' but 'what barriers to OEMs being willing to facilitate repair exist, and how can those barriers be addressed?'.

- how can repairs be enabled without compromising commercially sensitive knowledge?
- who should own data?
- how would a culture of accessible, affordable repair adversely impact on innovation, safety and quality of products produced by OEMs, and how can these concerns be addressed?
- how to balance the needs of consumers, OEMs, repair businesses, DIYers and the environment in making repair more accessible and affordable? There's clearly a market and a demand for a service, as the court case cited in the Issues Paper concerning the 50GB of Toshiba manuals downloaded every day reveals.

RISKS AND OPPORTUNITIES RELATED TO REPAIR

Across a range of sectors, the COVID 19 pandemic has highlighted the risks associated with dependency on a few large players and long supply chains. What are the risks involved where supply chain disruption impacts on the ability to repair, not only in terms of physical repair, but also where corporations have established monopoly rights over the knowledge and ability to repair?

Removing legal barriers is one thing, however it may be that legislation by government is needed to actively facilitate, rather than passively enable repair by creating legal enablers – for a car or washing machine, it is worth engaging with consumer law, but there are a swathe of products (eg. toasters, umbrellas, clothes) that fall below a threshold of it being worth doing, and policy innovations such as Sweden's 50% subsidy on repairs could be such an enabler.

[35] www.adelaidenow.com.au/news/south-australia/what-a-fab-way-to-repair-a-dogs-leg/news-story/e815d505d89aa17aae499274a7fc8860

Enablers are also information/awareness about where and how repair is possible, as well as time and convenience to seek a repair option. Any increased cost to the consumer or to governments must be considered in accordance with other policy levers such making repair a more competitive choice instead of discarding a product. High repair cost is an area where government intervention can play a role in shaping behaviour, as the Swedish policy of tax breaks for repairs demonstrates.

There are potential safety and liability issues to consider in encouraging a culture of repair at scale, however this need not be a barrier provided the risk management frameworks are conducive. Food rescuers OzHarvest are a good example, as they were only able to commence operation after getting relevant legislation changed in each state to transfer risk and liability to themselves and not the food donors[36].

The proliferation of repair cafes (of which there are currently six known to be operating in Adelaide[37]), tool lending libraries[38] (and more broadly, 'libraries of things'[39]) at community level is one way of fostering a culture of repair, as well as making. In a way, this allows more tools and equipment, especially those infrequently used, to be accessible through sharing rather than ownership.

Similarly, makerspaces are typically equipped with 3D fabrication equipment, and such spaces could provide a distributed network of spare parts replacement on demand, if the design of such parts is available online in a shared design commons, or able to be recreated - iFixit's web site has almost 70,000 free manuals and 175,000 solutions for almost 33,000 devices[40]. iFixit, a privately held company founded in 2003, has been active in 'Right to Repair' advocacy for almost two decades, and published its 'Right to Repair' manifesto in 2010, before legislation was passed in Massachusetts.

It is also worth understanding the role and latent potential of the hacker and maker community, who may be conducting repairs outside warranty, consumer law and monopoly regimes altogether, either in a paid or uncompensated transaction[41]. This energy has been admirably harnessed in relation to fabrication of PPE in the face of shortages during the coronavirus pandemic[42],[43].

There is also a danger of repair being seen as the new panacea - like recycling, repair is something we need to do, but we also need to slow the flow of materials needing repair (as well as recycling) by creating more durable products in the first place, and by exploring the business models that encourage this.

[36] www.legislation.sa.gov.au/LZ/C/A/CIVIL%20LIABILITY%20ACT%201936/CURRENT/1936.2267.AUTH.PDF
[37] www.sustainablecommunitiessa.org.au/recycling-waste/repair-cafe-payneham; www.sustainablecommunitiessa.org.au/projects/unley-repair-cafe; www.teatreegully.sa.gov.au/Events_and_places/Events_programs_and_activities/Repair_Cafe; www.gawlerenvironmentcentre.org.au/event-gawler-repair-cafe; https://stemlibrary.space/parks-repair-cafe; www.facebook.com/Repair-Cafe-Campbelltown-SA-103728601451735; www.facebook.com/adelaiderepaircafe
[38] http://brisbanetoollibrary.org; www.brunswicktoollibrary.org;
[39] www.libraryofthings.co.uk; www.shareable.net/how-to-start-a-library-of-things; www.shareable.net/in-vancouver-shipping-containers-are-the-new-tool-libraries
[40] www.ifixit.com/Right-to-Repair
[41] www.ifixit.com/Guide; www.ifixit.com/Manifesto
[42] https://opensourcemedicalsupplies.org/
[43] www.forbes.com/sites/helenpopkin/2020/12/26/forbes-technology-awards-2020-geeks-step-up-when-governments-fail