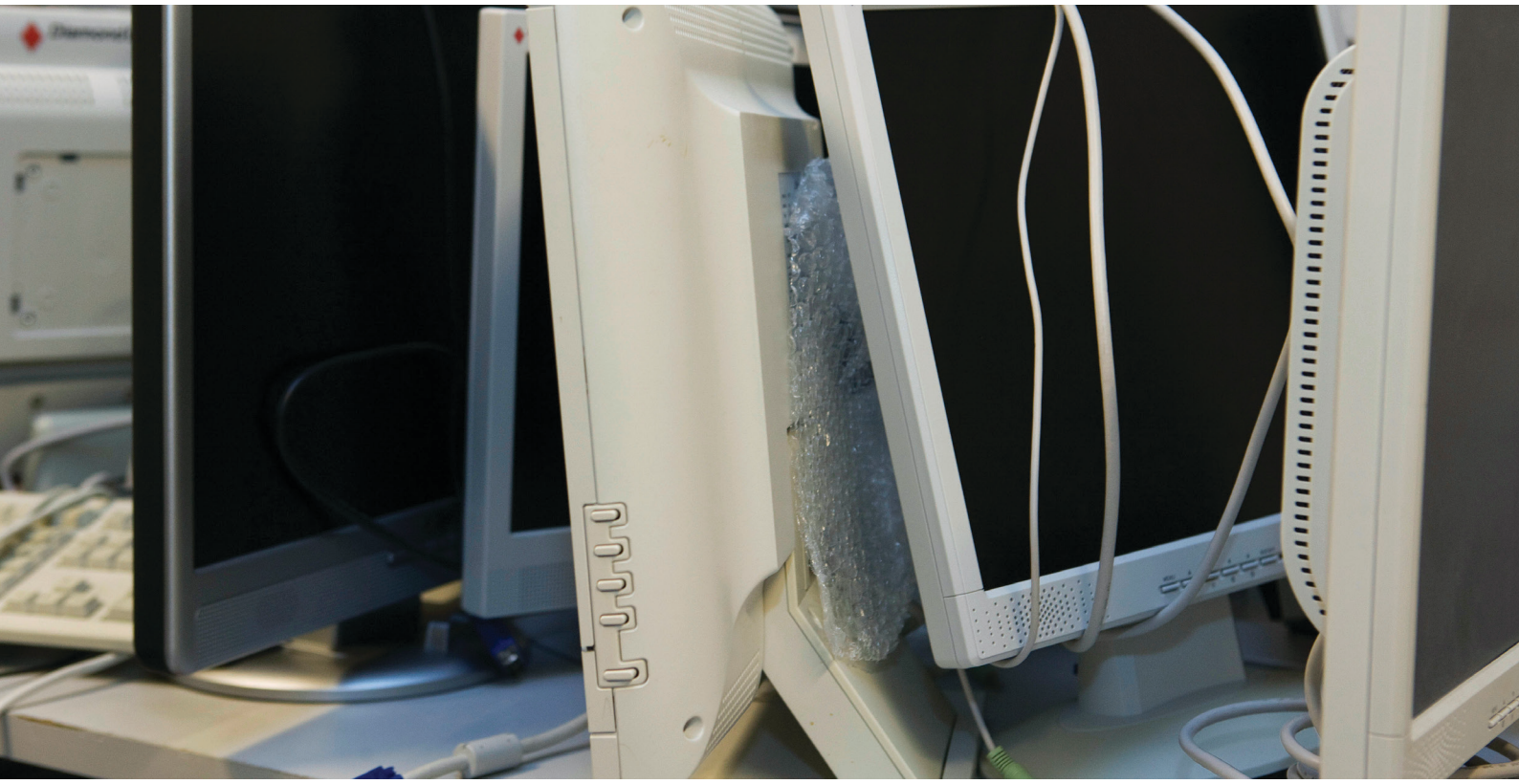
Australian Government

Department of the Environment

The National Television and Computer Recycling Scheme —Operational Review



November 2014

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1. Introduction

1.1. Purpose and scope of this review paper

On 22 September 2014, the Australian Government Minister for the Environment the Hon Greg Hunt asked the Department of the Environment (the Department) to review the operation of the National Television and Computer Recycling Scheme (NTCRS), to ensure it continues to support a shared approach by commonwealth, state and territory governments and industry on e-waste management.

The Australian Government established the scheme in 2011, on behalf of state and territory governments and the television and computer industries. The NTCRS has a ten-year roll-out schedule starting in 2012–13, at the end of which the television and computer industries will be required to fund the recycling of 80 per cent of the televisions and computers that enter the waste stream in Australia each year.

Now in its third target year, the NTCRS has proven an effective vehicle for industry to efficiently deliver high quality environmental outcomes. The television and computer industries have funded the recycling of over 100,000 tonnes of e-waste since May 2012, more than doubling the annual rate of e-waste recycling in Australia. More Australians in metropolitan, regional and remote areas now have access to free recycling of their old televisions and computers.

While the NTCRS has been a success, there are issues more broadly with e-waste management in Australia. These include unmet demand for e-waste recycling in many communities, and instability in the e-waste sector. Stakeholders have pointed to heightened business risk, including for some social and disability enterprises, along with concerns that market conditions will not support the recycling capacity that will be needed to meet scheme recycling targets as targets start to increase more rapidly over the coming years. The NTCRS is not able or designed to address all changes in the e-waste recycling market, but all stakeholders have an interest in ensuring its settings are the most appropriate to deliver its outcomes sustainably and efficiently.

The review will consider the need to adjust the scheme's operational settings, including metrics that govern its interaction with the e-waste recycling market. These metrics were developed based on modelling undertaken during the scheme's development. They embody assumptions about such things as the weight of television and computer products imported, the rate at which television and computer products enter the waste stream, the rate at which business and the community take up opportunities to recycle e-waste and the rate at which our national capacity to recycle e-waste can grow to meet future demand while avoiding unwanted environmental and health and safety outcomes.

Consultation with the recycling sector, television and computer companies and state, territory and local governments has informed the development of this paper. Key messages that have arisen from consultation are the need for greater transparency of information, increased collaboration between regulatory agencies and scheme stakeholders, and a clearer understanding of each party's responsibilities. Input is now sought on the future operational options presented in this paper, and on other ways in which the management of e-waste in Australia can be improved. Improvements may include better integration between the television and computer industries' efforts and the strategies of state, territory and local governments to manage e-waste falling outside scheme recycling targets.

This review paper will not consider the *Product Stewardship Act 2011* (the Act) or fundamental aspects of the scheme, including the co-regulatory approach, the role of competition in driving efficient delivery of outcomes and the use of recycling targets to ensure an appropriately phased transition of responsibility from state and territory governments to industry. A more comprehensive, statutory review of the product stewardship legislation is scheduled for 2016, as required under section 109 of the Act. A wider range of policy issues may be considered at that time.

Where regulatory amendments are being considered, detailed regulatory impact analysis will be undertaken. It is important to note that this review is occurring in the context of the Australian Government's commitment to reducing regulatory burden on industry.

1.2. Timeframe for the review and how to have your say

The estimated timeframe for the review of the operation of the scheme is outlined below:

- September – November 2014: Initial consultation to inform this review paper.
- November 2014: Review paper published with proposals for public comment.
- December 2014 – January 2015: Consultation on options for the scheme.
- 6 February 2015 – Written submissions due.
- December 2014 – April 2015: Analysis and costing of proposals outlined in this paper and those arising from subsequent consultation. Further targeted consultation if required.
- April – June 2015: Amendments to the Regulations drafted (if required).
- 1 July 2015: Commencement of fourth target period; regulatory changes take effect (if required).

Written submissions are invited on the matters elaborated in this paper. Decisions on ways forward will be made during March and April of 2015, to ensure full consideration of stakeholder feedback, and to allow time to develop any necessary regulatory impact analysis.

Submissions can be sent via email to:

e-waste@environment.gov.au

or alternatively via mail to:

Stewardship Regulator Section
Department of the Environment
GPO Box 787 CANBERRA ACT 2601

The deadline for all submissions is 6 February 2015. Submissions received after the deadline may not be considered. **All submissions will be published on the Department's website.** If confidential information is provided in a submission, please clearly mark the information as confidential and provide a redacted version of the submission for publication.

2. Background

2.1. What is the National Television and Computer Recycling Scheme?

The scheme is the largest producer responsibility scheme ever to roll out in Australia and was the first to be established under the Australian Government's *Product Stewardship Act 2011*. The Act came into effect on 8 August 2011 and provides the framework to effectively manage the environmental, health and safety impacts of products, including those impacts associated with the disposal of products. The Product Stewardship (Televisions and Computers) Regulations 2011 (the Regulations) underpin the scheme and came into effect on 8 November 2011.

The scheme does not cover all waste televisions and computers in Australia. Rather, it is part of a shared, Council of Australian Governments (COAG)-agreed approach to managing this waste stream between industry and all levels of government.

Under the NTCRS, the television and computer industries are required to fund collection and recycling of a proportion of the televisions and computers disposed of in Australia each year, with the aim of delivering a staged increase in the rate of recycling of televisions and computers in Australia from an estimated 17 per cent in 2010–11 to 80 per cent by 2021–22. The remaining waste televisions and computers, along with all other e-waste, remains the responsibility of state and territory governments and, through them, local governments.

In 2014–15 industry is required to recycle 35 per cent of waste televisions and computers, while state, territory and local governments are responsible for 65 per cent of television and computer waste. Industry's share of the waste stream must be recycled under the scheme. The Regulations do not prescribe any requirements for state and territory governments managing e-waste outside the scheme, and this proportion of e-waste may be dealt with as is deemed appropriate in each jurisdiction.

In instances where state and territory governments choose to implement landfill bans on e-waste, alternative disposal methods must be made available to the community. With a final capacity of 80 per cent at the end of the rollout period, there will always be e-waste which needs to be managed outside the scheme. If alternative options are not made available at the jurisdictional level, there is a serious risk of illegal dumping and other adverse environmental outcomes.

The allocation of responsibility for waste televisions and computers between the NTCRS and state and territory governments in the period to 2021–22 is given in Table 1 below. The scheme's target trajectory provides for a gradual increase in recycling between 2012–13 and 2016–17, with a more rapid increase occurring from 2017–18.

The initial recycling target of 30 per cent, which required a near-doubling of recycling in the scheme's first year, was intended to meet community expectations of increased access to recycling once the scheme commenced. The gradual increase in recycling after 2012–13 was intended to provide sufficient time for e-waste recycling capacity to increase without increasing health and safety risks and for television and computer companies to absorb the cost of recycling, and because the level of public demand for recycling in the scheme's early years was unknown.

Table 1: Proportional responsibility for e-waste by financial year

	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22
States/ territories	100%	70%	67%	65%	63%	60%	52%	44%	36%	28%	20%
NTCRS	0%	30%*	33%*	35%*	37%*	40%*	48%*	56%*	64%*	72%*	80%*

*Note: * Industry's share of the waste stream must be recycled under the scheme. The Regulations do not prescribe any requirements for state and territory governments managing e-waste outside scheme targets; this proportion of e waste may be dealt with as is deemed appropriate in each jurisdiction*

The increasing recycling targets under the NTCRS over time are intended to ensure:

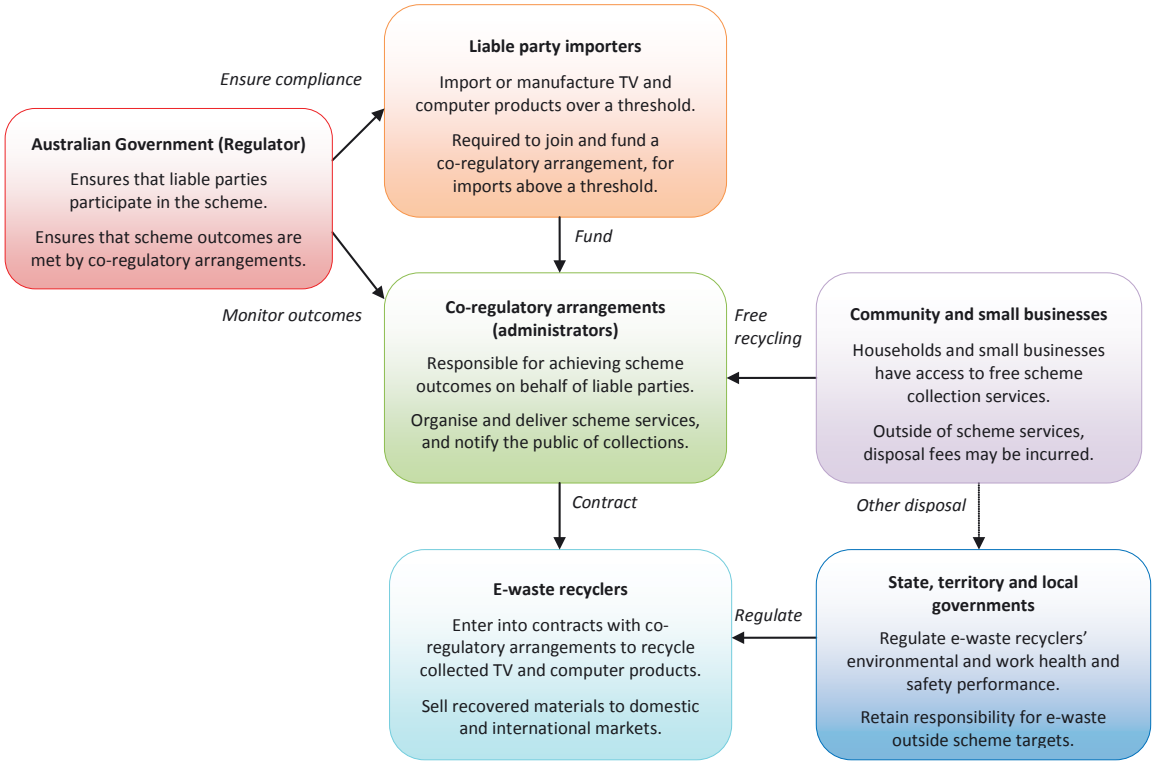
- that increasing hazardous materials such as lead, mercury and brominated flame retardants are diverted from landfill and other less desirable disposal methods.
- that reusable materials such as precious and other metals, plastic and glass are recovered.

A recycling rate of 80 per cent is higher than the current recycling rate for any other household consumable, such as paper and packaging, and for comparable recycling programmes internationally.

In addition to retaining responsibility for e-waste beyond NTCRS recycling targets, state and territory governments are responsible for regulating the recycling industry in their jurisdictions, including the compliance of recyclers with state and territory environmental and health and safety laws.

Collection and recycling of e-waste under the scheme is managed through approved co-regulatory arrangements, which are administered by industry. Companies importing or manufacturing over a specified threshold of television or computer products are liable under the scheme and must join and fund an approved co-regulatory arrangement to provide collection and recycling services on their behalf. The roles of government and non-government stakeholders are described in Figure 1 below.

Figure 1: Roles and responsibilities of NTCRS stakeholders



The co-regulatory model is a key design feature of the NTCRS. Under this model, the Australian Government, through the Regulations, has set the outcomes to be achieved by industry and how this is to be monitored and reported. The television and computer industries, operating through the approved co-regulatory arrangements, determine how to deliver these outcomes efficiently. The co regulatory, market-based model was chosen because it enables lower regulatory cost and more efficient achievement of outcomes than a mandatory approach, while still addressing the free rider problem that may occur under voluntary approaches.

Each approved co-regulatory arrangement is required to achieve a portion of the total scheme recycling target, based on the import or manufacture share of its members. Recyclers and other service providers are contracted by the co-regulatory arrangement administrators through a competitive market. These contracts are private commercial agreements between co-regulatory arrangements and third parties. The co-regulatory arrangements are not obliged to work with local governments, although some are contracting or partnering with local governments to provide collection services. Some co-regulatory arrangements are providing collection services primarily through alternative channels, such as electrical retail outlets.

From 1 July 2014, the NTCRS requires co-regulatory arrangements to meet a material recovery target of 90 per cent, meaning that 90 per cent of the weight of televisions and computers recycled under the NTCRS must be processed into materials that are able to be re-used or manufactured into new products. Each co-regulatory arrangement is also required to provide access to recycling services for communities across metropolitan, regional and rural Australia. This requirement ensures that approximately 97 per cent of the Australian population has access to scheme services.

Administrators applying to establish co-regulatory arrangements are assessed by the Department, and are required to demonstrate capacity to achieve collection and recycling outcomes, address environmental, health and safety matters, and administer governance arrangements for liable parties.

Five industry-run co-regulatory arrangements have been approved to administer the scheme and provide waste collection and recycling services: DHL Supply Chain (Australia) Pty Limited, Australia and New Zealand Recycling Platform Limited (ANZRP), E-Cycle Solutions Pty Ltd, Electronics Product Stewardship Australasia and Reverse E-Waste.

2.2. Development

Under the Australian Constitution, responsibility for waste management rests with state and territory governments. The involvement of the Australian Government arose through COAG, in response to the scope of the growing e-waste challenge and the desire of industry, the community and state and territory governments for a more consistent national approach to recycling.

It was estimated that in 2009–10, around 109,000 tonnes of televisions and computers reached end of life in Australia. This annual figure represents approximately five kilograms of television and computer waste generated per capita. It was estimated that only 10 per cent of these products were recycled, with the remainder either stockpiled or sent to landfill. The amount of waste arising annually was also increasing due to rapid technological change, shorter life spans of products and increasing ownership of electrical products. The weight of televisions and computers reaching end-of-life was projected to grow to around 320,000 tonnes by 2023–24.

The decision to implement a product stewardship scheme for televisions and computers was informed by a thorough analysis of the impact of a national regulated recycling scheme. This analysis demonstrated that an industry run and funded recycling scheme for televisions and computers would provide a significant net benefit to society over the period from 2008–09 to 2030–31. The 2009 regulatory impact statement considered by the

then Environment Protection and Heritage Council in deciding to establish the scheme is available on the former Standing Council on Environment and Water's website at www.scew.gov.au/system/files/resources/0c513e54-d968-ac04-758b-3b7613af0d07/files/ps-tv-comp-decision-ris-televisions-and-computers-200911-0.pdf.

By establishing and administering the scheme, the Australian Government is aiding state and territory governments and, through them, local governments to meet their responsibilities to manage this growing waste stream.

2.3. Design and communication

The scheme was co-designed by the Australian, state and territory governments and was endorsed by all governments through COAG. In July 2009, a consultation package was released on options for a national recycling scheme for televisions and computers, and public consultation sessions were held in Adelaide, Perth, Sydney and Melbourne. A total of 130 submissions were received from a broad range of stakeholders including television and computer manufacturers, industry associations, state and territory governments, local governments, environmental organisations and individuals. Submissions provided almost unanimous support for the introduction of a national scheme for television and computer recycling, underpinned by Australian Government regulation.

To inform the operational aspects of the scheme, the Australian Government established a Stakeholder Reference Group of representatives from the television, computer and recycling industries, environmental and community groups and state, territory and local governments. Between May 2010 and May 2012, the Stakeholder Reference Group facilitated engagement between key stakeholders and the government on the development and implementation of regulations for television and computer recycling.

Recognising the vital role that all levels of government would continue to play in managing waste televisions and computers, COAG endorsed a project aimed at improving understanding of the ongoing roles and responsibilities of these entities. The Australian Government also undertook a national programme of facilitated discussion sessions with local government, recyclers and charities. A total of 360 councils, representing 84 per cent of Australia's population, took part in these sessions.

In order to assist with managing community expectations relating to demand for television and computer recycling, local governments were provided tailored communications and educational material on the scheme. The Australian Government also wrote to the mayors of all councils to provide information on the expected rollout timeframes, and to reiterate the importance of local governments continuing to manage television and computer waste falling outside the scheme's targets in its early years of operation.

Co-regulatory arrangement administrators also have an important role to play in ensuring that members of the public are aware of the scheme, and know how to access collection services. Education and awareness activities may include print and online advertising, local radio, social media, and a range of opportunities that result from involvement in frontline delivery of the scheme.

Currently, the Australian Government is liaising with state and territory agencies to revisit scheme communications and ensure that all parties are receiving consistent messages which explain all relevant responsibilities and assist in managing expectations.

Recommendations

1. Co-regulatory arrangements strengthen awareness and increase understanding of the scheme's design through targeted communication activities.

3. Performance of the scheme

3.1. Achievement of outcomes

Over its first two years of operation, the NTCRS has exceeded its outcomes. Data on the scheme's achievement against its recycling targets is given in Table 2 below.

In the first target year of 2012–13, an estimated 137,756 tonnes of televisions and computers reached end of life in Australia. The television and computer industries were required to fund the collection and recycling of 30 per cent of this amount, or 41,327 tonnes. A total of 40,813 tonnes of recycling was achieved, equivalent to 98.8 per cent of the scheme target and almost double the estimated level of recycling prior to the scheme's introduction.

In the second target year of 2013–14, the total weight of televisions and computers reaching end of life was approximately 131,000 tonnes. The target for the television and computer industries was 33 per cent of this amount—around 43,400 tonnes. The television and computer industries exceeded this target in 2013–14, collecting and recycling in excess of 52,700 tonnes. National data is not available on the amount of e-waste recycling undertaken outside of the scheme in 2012–13 and 2013–14.

Table 2: Achievement against NTCRS recycling targets

	2012–13	2013–14	Total
Recycling target (tonnes)	41,327	43,400*	84,727*
Recycling achieved (tonnes)	40,813	52,700*	93,513*
Percentage of target achieved	98.8%	121.4%	110.4%*

* Data subject to confirmation

The first NTCRS collection services were established in May 2012. By the end of June 2013, a total of 635 collection services, including drop off points at major electronics retailers and local government and other waste facilities, as well as temporary collection events, had been provided by co-regulatory arrangements. Updated figures on the provision of collection services will be available following publication of co-regulatory arrangements' annual reports for 2013–14.

On 1 July 2014 the scheme's 90 per cent material recovery target came into force. This is underpinned by a material recovery measurement and reporting methodology developed by the Department in consultation with stakeholders. This will ensure that a consistent standard of recycling is achieved under the scheme as targets track towards 80 per cent in 2021–22.

A key driver for the television and computer industries in supporting establishment of the scheme is to eliminate the free rider problem that can arise if not all players in the sector contributed to delivering the outcomes. This has been achieved by the NTCRS to date, with 100 per cent compliance achieved in the 2012–13 and more than 99 per cent in 2013–14.

Another important development was the publication of Australian/New Zealand Standard 5377:2013 *Collection, storage, transport and treatment of end-of-life electrical and electronic equipment* (AS 5377). This standard was developed with Australian Government support and the full involvement of scheme stakeholders. The Australian Government is currently supporting the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) to develop an accreditation process for certifying bodies, to facilitate uptake of the standard by the recycling industry.

It is expected that the accreditation process for AS 5377 will be finalised in early 2015. Recyclers may then choose to be certified to AS 5377 by certified accreditation bodies. Depending on the type of recycling services undertaken, certification requires auditing by a certified accreditation body against: requirements for collection and storage facilities; recovery for reuse from end-of-life electrical and electronic equipment; requirement for transportation; and the requirements for the treatment of end of life electrical and electronic equipment. All recyclers certified to AS 5377 are required to have identified and minimised occupational health and safety and environmental hazards and risks at their premises, and have established and continue to maintain compliance with all applicable domestic and international regulatory requirements.

There is support from the recycling industry for a regulatory approach to increasing the uptake of AS 5377. While this could be achieved by obliging co-regulatory arrangements to work solely with recyclers that were certified to AS 5377 by an accredited certifying body, regulation may not be required or appropriate to support uptake of the standard. Should a mandatory approach be preferred, the Department would need to undertake regulatory impact analysis and consider how this could be achieved without increasing the regulatory burden on industry. As recyclers may also need to establish additional processes to meet requirements for certification, a lead time would be needed prior to commencement of any new regulatory requirement.

Recommendations

2. Stakeholders consider whether regulatory amendment is necessary to support uptake of AS 5377 and, if so, whether this could be done without increasing the regulatory burden on industry.

4. Issues identified with e-waste management in Australia

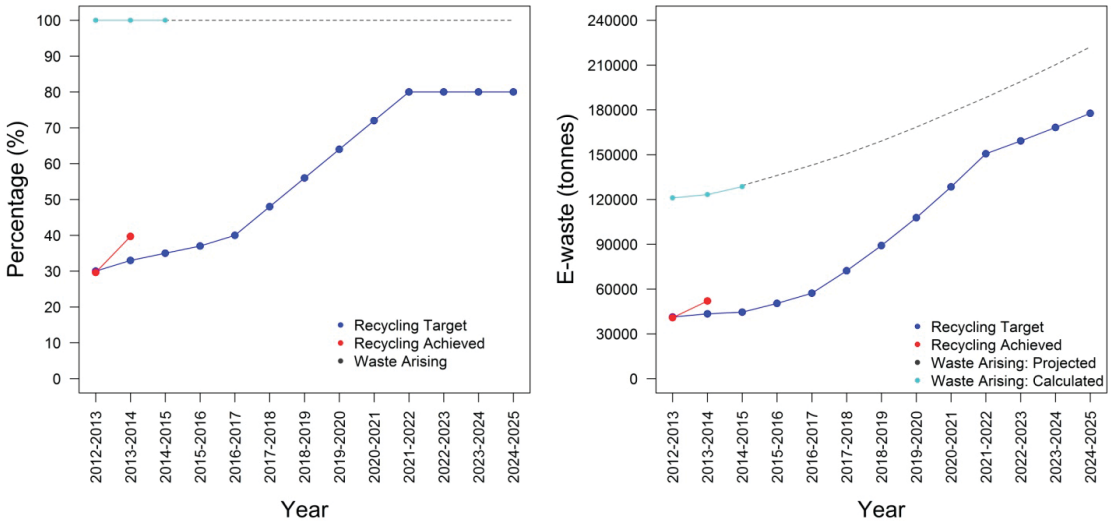
As noted in Section 1.1 of this paper, despite the success of the NTCRS, a number of issues have been identified with e-waste management in Australia. These issues have been discussed with stakeholders during initial consultations undertaken during preparation of this paper. Based on these discussions, it is apparent that a mismatch between the community's demand for e-waste recycling and the target trajectory in the early stages of the NTCRS has resulted in a stop-start roll-out of scheme services. This is detracting from the scheme's potential to support market conditions that provide stability in service provision and in the recycling sector. Unstable market conditions pose a risk to recycling capacity and to the social benefits to social and disability employment provided by the e-waste sector.

4.1. Shortfall in funded recycling in the short to medium term

It is apparent that the community's demand for e-waste recycling is exceeding the availability of funded recycling, including the scheme's recycling targets and recycling supported outside the scheme. Although the scheme's reasonable access provisions have ensured that recycling services have been made available across metropolitan, regional and remote Australia, the co-regulatory arrangements have had to restrict access to services in many cases to avoid collecting more e-waste than they are funded to recycle. The result has been that some areas have had no or intermittent services under the scheme, leading to challenges in planning for and meeting community expectations.

Despite co-regulatory arrangements' efforts to wind back scheme recycling services in some areas, recycling under the scheme significantly exceeded the scheme recycling target in 2013–14, as shown in Figure 2 below. In Figure 2, the graph on the left shows recycling achieved in the first two years of the scheme against the percentage recycling targets. The graph on the right shows recycling achieved against targets in terms of tonnes of recycling. The projected recycling in this graph is based on modelling undertaken prior to the scheme's commencement, recalibrated using observed waste arising data.

Figure 2: Comparison of recycling achieved to date under the scheme and projected annual recycling targets based on current settings. Left: Recycling achieved to date and annual recycling targets to 2024–25 as a percentage of waste arising. Right: Recycling achieved to date and projected annual recycling targets to 2024–25 in tonnes.



The additional recycling achieved under the scheme over the first two target years, around 8,700 tonnes, has not been funded by the television and computer industries, which are not obligated or expected to fund recycling beyond scheme targets. The cost of recycling additional e waste, estimated at around $8 million to date, has instead been borne by the scheme's co-regulatory arrangement administrators. Although the administrators may be able to recoup this cost in future years by acquitting the excess recycling against future targets, this will be dependent on the arrangement having sufficient membership to provide for a sufficient recycling target and the arrangement recycling less than its target amount in future years.

Having co-regulatory arrangement administrators fund significant amounts of additional recycling carries substantial financial risk for the administrator and, to the degree that it threatens the viability of the administrator, is a risk to the stability of the scheme. It is anticipated that recycling undertaken under the scheme in 2014–15 will be less than the scheme's target of around 44,500 tonnes, as coregulatory arrangements use excess recycling from 2013–14 to meet part of their 2014–15 targets.

However, not all of the excess amount will be acquitted in 2014–15, meaning that the carryover of and acquittal of excess recycling will continue to exert downward pressure on recycling in 2015–16. Based on the current roll-out schedule and recycling target projections, the level of recycling achieved under the scheme in 2013–14 is unlikely to be achieved again until 2016–17.

Although some local governments have continued recycling, or are resuming recycling following the withdrawal of scheme recycling services, it is unlikely that recycling funded through local governments will adequately address the current shortfall against demand for recycling services.

Options to address this issue are outlined in Section 5.

4.2. Instability in the E-Waste recycling sector

In the absence of intervention to increase the level of funded recycling, co-regulatory arrangement administrators will continue to seek to contain the financial liability arising from over-collection, by reducing or withdrawing recycling services, including in regional and remote areas that may be more expensive to service. Although the co-regulatory arrangement administrators have in many cases sought to contain the impact on recycling and collection service providers, for example by reducing rather than stopping collection or recycling, inevitably there has been an impact on these service providers as the rate of scheme recycling has decreased.

In the development of any market, it is to be expected that consolidation will occur over time and that those businesses better able to manage fluctuations in demand for their services will have an advantage. However, concern has been raised that the situation described above is not supporting market conditions conducive to the maintenance of sustainable, high-performing recycling capacity that will be needed to deliver NTCRS outcomes in the medium term.

Many recycling businesses are experiencing intermittent and declining feedstock. Some e-waste recycling businesses have closed, while others are reporting financial stress. With recycling targets under the scheme projected to increase more rapidly after 2016–17, there is a risk that the capacity to service these targets will be lost due to what is anticipated to be a relatively shortterm market contraction.

Financial difficulties faced by e-waste recyclers under current market conditions present two further risks for e-waste management in Australia.

The first risk is the social impact of the closure of recycling businesses due to short-term market conditions, and its related effects on employment and the availability of recycling services at the local level. Many smaller e-waste recyclers are social and disability employers. These businesses often play an important role in their communities as providers of local recycling services for e-waste and other waste streams, as well as by providing important employment opportunities and other social benefits. The role of these businesses in the e-waste recycling process is also important, as they frequently provide local dismantling services making downstream processing of dismantled products by larger recyclers more efficient.

The second risk is unstable market conditions which increase the risk of environmental incidents. Recyclers experiencing financial stress are more likely to stockpile materials that are expensive to process, including cathode ray tube (CRT) glass. This is a matter of considerable concern to state and territory environment protection agencies and carries risk of abandonment of potentially hazardous waste by failed recyclers.

Options to address these issues are outlined in Section 5 below.

4.3. Equitable outcomes for liable parties

As noted in Section 1.1 of this paper, key metrics written into the regulations underpinning the scheme embody assumptions that need to be revisited from time to time. These include the conversion factors that are used to calculate the weight of products for which importers are liable and hence the amount of recycling that must be funded, and the scaling factor used in estimating the amount of television and computer waste that becomes available for recycling each financial year.

Some importers of televisions and some computer peripherals have highlighted that changes to technologies over time have meant that some conversion factors are no longer accurate and need to be amended.

Importers also suggest that the export of computer systems for re-use in overseas markets means that less computer waste enters the waste stream in Australia than is estimated by the current scaling factor, and that this should be taken into account by adjusting the scaling factor.

Proposals to address these issues are outlined in Section 7 below.

5. Addressing the shortfall in funded recycling

To address the issues outlined in Section 4 above, regulatory and non-regulatory actions may be appropriate. A package of adjustments to the NTCRS is proposed below. These include an adjustment to the roll-out schedule of the NTCRS towards the 80 per cent recycling target, by bringing forward the steeper increases to the scheme's target trajectory to address the shortfall of funded recycling in the short-term, while delaying the ascent to the 80 per cent target in order to ensure that the overall environmental outcome and regulatory burden on the television and computer industries remains unchanged over time. At the same time, the regulatory burden on liable parties would be reduced through adjustments to the waste arising scaling factor, product codes and conversion factors. In addition, reporting by co-regulatory arrangements would be adjusted to recognise their engagement of social and disability enterprise recyclers.

Non-regulatory approaches are also discussed below, including encouraging co-regulatory arrangements to consider the longer term impacts of their interactions with service providers and opportunities for state, territory and local governments to enhance their interactions with the NTCRS and management of the shortfalls in funded recycling and fluctuations in demand that will inevitably continue to occur at the local level.

5.1. Increasing the level of funded recycling in the short to medium term

The scheme's target trajectory, which sets the proportion of e-waste to be funded by the television and computer industries, consists of a gradual increase of 2 to 3 per cent per year for the first four target years. This gradual increase in the target percentage reflected concerns about the ability of the recycling sector to safely manage increasing throughput, and the need to allow the television and computer industries to build scheme requirements into their business costing during the initial implementation phase. In setting this trajectory, it was recognised that community uptake of recycling opportunities in the scheme's early years was difficult to predict and that potential misalignment between the scheme's early target trajectory and public demand was a key risk to the scheme.

This steady trajectory has enabled recycling capacity to be developed while maintaining a relatively low rate of health and safety incidents in the sector. However, one area where the capacity of the recycling industry has taken some time to catch up with the increased level of recycling and material recovery is the processing of CRT televisions. It is apparent that in some cases, planned solutions for managing waste CRT glass did not deliver adequate performance, leading to some instances of stockpiling and the need for intervention by state environmental regulators. With the commencement of the mandatory material recovery target on 1 July 2014, the recycling sector is expanding access to existing markets and assessing new markets and material recovery processes.

Some investment has occurred in the e-waste sector since the commencement of the NTCRS. Current capacity is sufficient to meet community demand for recycling services, despite the community's demand for recycling now significantly exceeding the scheme's roll-out schedule.

This situation is having significant impacts on e-waste management in Australia. For example, a number of recyclers are facing fluctuations or reductions in their supply of funded recycling, making business planning and management and engagement of staff more difficult. Operators of e-waste collection sites, including some local governments, are finding it difficult to manage the withdrawal or reduction of industry-funded services under NTCRS.

To address this situation, without recourse to measures such as large-scale stockpiling or disposal of e-waste to landfill, it is necessary to bring forward the level of funded recycling over the short to medium term.

It was always expected that some management of e-waste would need to continue outside the NTCRS, particularly during the roll-out towards the 80 per cent recycling target. As state, territory and local governments retain responsibility for e-waste beyond the scheme's recycling targets, efforts by these organisations, particularly local governments, are vitally important to address gaps in e-waste management capacity at the local level. Although in most cases local government recycling efforts have been absorbed into the NTCRS, in some cases local governments have continued or resumed recycling to address unmet demand at the local level, or are considering options for doing so.

Consultation has highlighted some challenges faced by local governments. These issues include reconciling free NTCRS services with user pays services, and communicating this message to residents, and the withdrawal or reduction in scheme services when recycling targets are reached. These difficulties are pronounced where management strategies for e-waste outside of NTCRS targets were not put in place by local governments.

Some local governments are now considering models to build all or part of the cost of local e-waste recycling back into their budgeting processes. Several co-regulatory arrangements have offered to work with state, territory and local governments outside of the NTCRS, to meet local demand that will not be met by funded recycling. Given the frameworks already in place under the co-regulatory arrangements, this may be an efficient way of dealing with recycling at the margins of the NTCRS in the coming years.

State, territory and local government efforts to support e-waste management are and will remain important. However, reliance on local government efforts to meet the substantial shortfall in funded recycling during the current period of high community demand and low NTCRS target growth is neither consistent with community expectations or the intent of the NTCRS. Ensuring that the bulk of recycling continues to occur under the NTCRS will ensure that the objectives of the NTCRS, such as the equitable provision of services to communities in metropolitan, regional and remote Australia and the delivery of high quality recycling driven by the scheme's 90 per cent material recovery target, continue to be met.

A suggested approach to addressing the current shortfall in funded recycling is to bring forward the period of increased growth in recycling under the scheme. The current NTCRS recycling targets and the proposed new recycling targets can be found at Table A1 in the Appendix. Given the rapid increase in recycling targets currently scheduled to occur between 2017–18 and 2021–22, there is scope to bring forward the target trajectory to address the issues identified in the short term, but to avoid any substantial increase in regulatory burden by delaying the progression to an 80 per cent target beyond 2021–22. Options for doing so are presented in Section 5.2 below.

Any decision to adjust the target trajectory would only be made following consultation and regulatory impact analysis, and would not occur before late March 2015. However, given the issues identified it is important that this possibility be considered. Television and computer companies may therefore wish to consider the implications of a possible adjustment in their business planning for 2015–16.

It is also important to reiterate that, even in the event that the target trajectory was adjusted, responsibility for managing any remaining local shortfalls in funded recycling or fluctuations in demand for recycling will continue to remain with state, territory and local governments.

5.2. Options to reset the target trajectory

Three alternative scheme target trajectories have been modelled for consideration. It is important to note that each of the options maintains the established maximum proportion of television and computer industry funded recycling at 80 per cent, and involves an initial increase in the recycling target balanced by a more gradual trajectory towards the 80 per cent target. This reflects the Government's intention that any increase in the target trajectory will not significantly increase the burden on the television and computer industries over the projection period. Information on further potential cost offsets is included in Section 6 below.

Target trajectory based on current settings (business as usual, or BAU): the recycling target percentage began at 30 per cent in 2012–13 and rises to 80 per cent in 2021–22. The target for 2014–15 is 35 per cent. This increases by two per cent in 2015–16 and three in 2016–17. The target then increases by eight per cent per year to meet the target of 80 per cent by 2021–22.

Option 1: the recycling target percentage is increased to 48 per cent for 2015–16. The trajectory then increases by four percent per year to reach 68 per cent by 2020–21. From 2021–22 the trajectory slows, increasing by two per cent per year to meet the target of 80 per cent by 2026–27.

Option 2: the recycling target percentage is increased to 52 per cent for 2015–16. The trajectory then increases by four percent per year to 2017–18, and then increases by two percent per year until 2028–29, to meet the target of 80 per cent by 2028–29.

Option 3: the recycling target percentage is increased to 56 per cent for 2015–16. The trajectory then increases by two per cent per year to 72 per cent by 2023–24, and then increases by one percent per year to meet the 80 per cent target by 2031–32.

Figure 3 below compares the current target trajectory to target trajectories proposed under Options 1, 2 and 3, as percentages of waste arising. The percentages targets for each option are given in Appendix Table A1. In each option, the adjusted target trajectory sits above the current trajectory for a three year period from 2015–16 to 2018–19, with option 3 providing for the greatest increase above current settings in that period. In 2019–20, each option intersects with the current trajectory, at 64 per cent of waste arising. After 2019–20, each of the three options increases towards the 80 per cent target at a slower rate than on current settings, with Option 3 providing for the slowest increase.

Figure 3: Options for increasing recycling targets: comparison of options for percentage targets with BAU

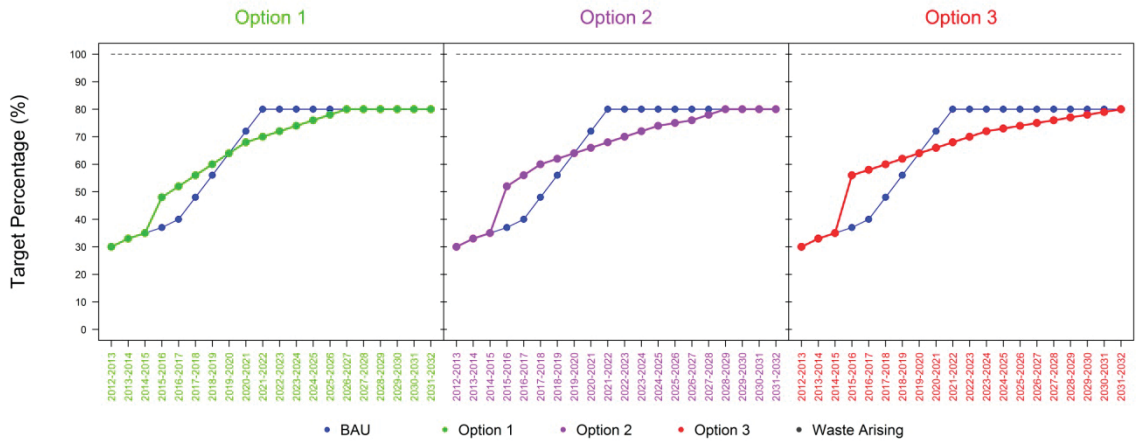


Figure 4 below compares projections of the recycling targets of the BAU scenario to Options 1, 2 and 3, in terms tonnes of recycling. The waste arising trajectory in Figure 4 is based on the trajectory developed for the Department by Meta Economics in 2011 and published in the report '*Alternative trajectories for computer and television recycling: Achieving the 80 per cent target by 2021–22*', recalibrated in the light of observed waste arising data since the scheme's commencement.

The data underlying the projections in Figure 4 is provided in Appendix Table A2. Based on these projections, total recycling under option 1 over the projection period would be 73.5 per cent of waste arising under current settings, while the three alternative options would see a slight reduction in overall industry-funded recycling during this period, to 73.0 per cent under Option 1, 72.4 per cent under Option 2 and 71.8 per cent under Option 3.

Figure 4: Options for increasing recycling targets: comparison of options for percentage targets with BAU

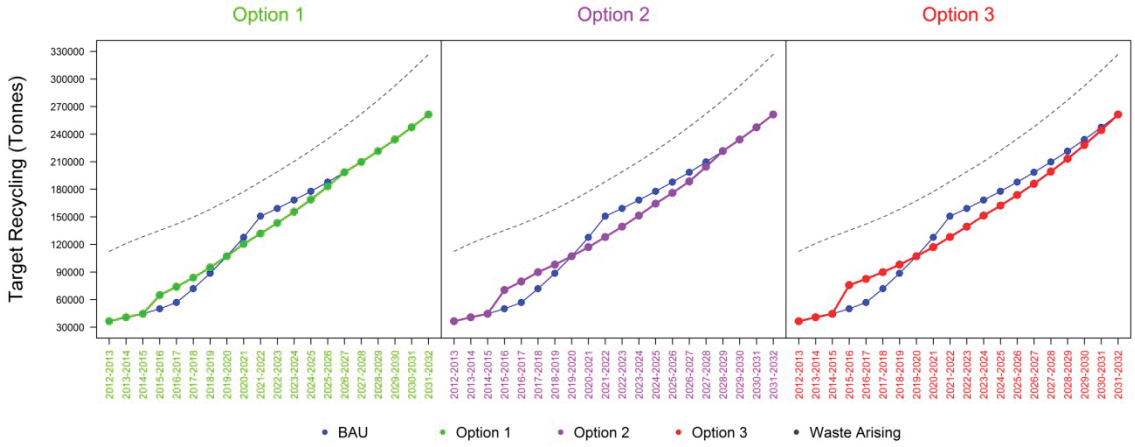
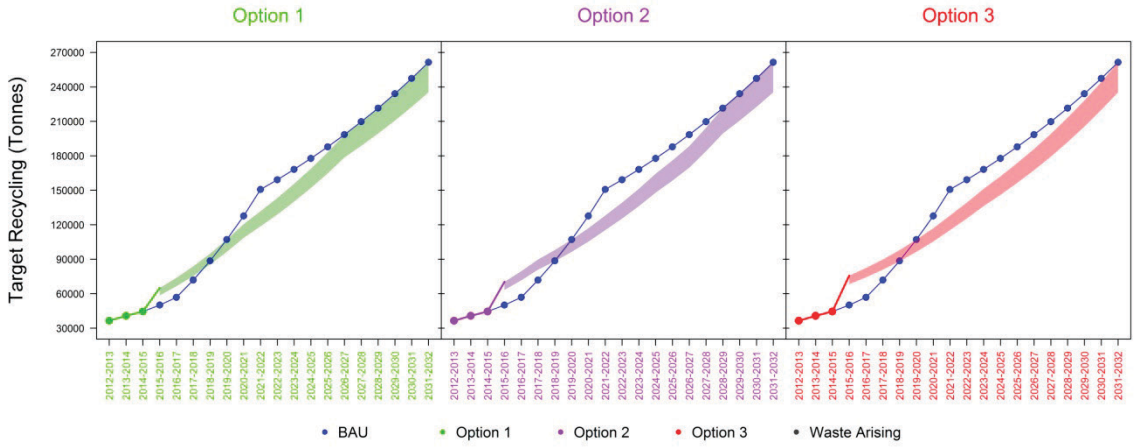


Figure 5 below compares projected recycling under the current roll-out schedule to a potential range of recycling targets (in tonnes) when proposed amendments to conversion factors and scaling factors (see Section 6 below) are considered for Options 1, 2 and 3. The shaded bands on each graph show the potential impact of these adjustments, which are, for illustrative purposes, assumed to result in a reduction in annual recycling targets of up to 10 per cent of waste arising, from 2015–16. The data underlying the projections in these graphs is provided at Appendix Table A3.

Figure 5: Projected recycling trajectories under Options 1, 2 and 3 compared to BAU, in tonnes, taking into account proposed amendments to reduce the regulatory burden, including adjustments to conversion factors and the waste arising scaling factor



Findings

A. State, territory and local government strategies to manage e-waste outside the NTCRS remain an essential part of e-waste management in Australia. Some governments are continuing or considering actions to address shortfalls in funded recycling and fluctuations in demand for recycling at state and local levels. Partnering with co-regulatory arrangements may be a cost-effective way for state, territory and local governments to provide local recycling in addition to that funded under the NTCRS.

Recommendations

3. Stakeholders provide feedback and the Department undertake regulatory impact analysis on the options outlined for possible adjustments to the target trajectory.

6. Underpinning sustainable recycling capacity

6.1. Increased certainty for the recycling industry

As pre-scheme recycling has largely been absorbed into the NTCRS, some recycling organisations have reported that they have a limited customer base outside of the scheme. In any industry, business agility and diverse revenue streams are crucial for ongoing viability. It is apparent that those recyclers with customers and business lines outside the scheme are better able to manage fluctuations in demand for their services from within the scheme.

Although the potential changes to the target trajectory outlined above could go some way to easing the current challenges in the e-waste sector, it is not intended that the scheme will prop up unviable businesses. As in any industry, e-waste recyclers are responsible for their own business decisions and should exercise due diligence in making any investment or other business decision. It is likely that some businesses will need to consider transitioning out of the e-waste sector over time.

However, to ensure that important capacity is not lost due to short-term market conditions, there may be some adjustments that can be made to the settings of the NTCRS that would help improve industry stability.

A key constraint noted by the recycling industry is that contracts with co-regulatory arrangements are not guaranteed, and visibility into the long term supply of e-waste feedstock can be unpredictable.

The length of contracts between co-regulatory arrangements and recycling providers is largely dependent on an annual cycle involving television and computer imports by liable parties, subsequent membership agreements with co-regulatory arrangements, the provision of collection services and the achievement of scheme recycling targets. Under the current competitive, co-regulatory model, each arrangement's target depends on its market share in the financial year. Membership numbers, and hence market share, are not guaranteed, and could be zero in any financial year. The introduction of minimum contract lengths has been suggested by some stakeholders. However, implementation of such a proposal would require fundamental changes to the competitive market model of the NTCRS, which are beyond the scope of this review.

One practical approach is to increase visibility into predicted supply volumes, and allow businesses to plan accordingly. Supply fluctuations can occur for a number of reasons, including consumer disposal behaviour and the fulfillment of recycling targets by co-regulatory arrangements. In order to operate efficiently, the e-waste recycling industry requires a clear line of sight on feedstock supplies of e-waste. Greater visibility into predicted supply, in addition to robust planning and due diligence by business, will assist recycling businesses to achieve longer term stability. The Department will consider options to provide more information to the market to assist planning.

Initial stakeholder feedback has indicated that additional notice by co-regulatory arrangements regarding fluctuations in supply of e-waste would assist in effective business planning for recyclers and collection service providers. Co-regulatory arrangements are encouraged to work with recyclers and other service providers to ensure that information and changes to procurement affecting their businesses is provided at the earliest practicable time.

6.2. Earlier notification of import share and recycling targets

Earlier notification of import share and recycling targets would have positive flow on effects for supply visibility and contract stability for both recyclers and co-regulatory arrangements.

The recycling targets of the co-regulatory arrangements and the import or manufacture shares of their members depend on import data provided to the Department by the Australian Customs and Border Protection Service (Customs). Customs import data is derived from import declarations made by importers upon arrival of the goods in Australia. Importers have full responsibility for ensuring that the data they submit to Customs accurately reflects their imported products. Under Customs law, where importers have provided incorrect information to Customs on their import declarations, they are required to amend this information.

During each scheme target year, a number of liable parties have found it necessary to amend their import declarations. This has resulted in updated import data being provided to co-regulatory arrangement administrators throughout the year, with consequential changes not only to that arrangement's recycling target, but also to the recycling targets of the other co-regulatory arrangements and the import or manufacture shares of all liable parties. While individual changes may be small, the overall impact has been an increase in administrative cost and uncertainty over targets and liability.

It is proposed that, for the purposes of the scheme, the Regulations be amended to establish a settlement date during each target year, after which amendments to import declarations would not be taken into account in calculating recycling targets for co-regulatory arrangements, or the converted weight of imports by a liable party. This would allow the recycling targets of co-regulatory arrangements and the import or manufacture shares of liable parties to be confirmed by late September of each financial year, rather than being subject to change throughout the financial year. This reduction in red tape would also have positive flow on effects for other stakeholders, including more predictable payment arrangements for liable parties.

6.3. Smoothing of recycling rates between target years

During the preparation of this paper, stakeholders suggested options for smoothing the rate of recycling across financial years as a way to reduce instability in the e-waste sector. One option is to allow co-regulatory arrangements more flexibility in the delivery of recycling by enabling an overlap period between target periods.

Currently, arrangements are required to deliver their recycling and material recovery targets in full within each financial year. Because an arrangement's membership and other target variables for a financial year may not be clear until September or October, arrangements may have a limited timeframe of 8 to 9 months in which to adjust their rates of recycling to track towards their targets. This has proved challenging in some cases. In 2012–13, the rate of recycling increased rapidly during the final quarter of the financial year as arrangements strived to meet their recycling targets, which then contributed to an uneven distribution of recycling throughout the following year. This issue could be addressed by introducing a target offset period, allowing recycling undertaken from July to August each year to be counted either towards the current or previous financial year's target. This may assist in smoothing the recycling rate throughout the year, and avoid sudden increases and decreases in supply for e-waste recyclers.

6.4. Opportunities for the social and disability enterprise sector

The possible adjustments outlined above, including options to increase funded recycling and underpin sustainable recycling capacity, will benefit social and disability enterprises. In addition, it is proposed that co-regulatory arrangements be required to report on their engagement of social and disability employers through the existing annual report process. This would provide greater public awareness of the contribution of the scheme and its stakeholders to supporting this important part of the recycling sector.

As noted in Section 4.2 above, social and disability enterprise recyclers make an important contribution to Australia's e-waste recycling capacity and deliver valuable social and employment outcomes for local communities.

The Department of Social Services has carriage of policy and programmes related to disability employment outcomes. These programmes include funding Australian Disability Enterprises under the Disability Employment Assistance programme. The funding for Australian Disability Enterprises is ongoing, with additional temporary viability support available for competitive enterprises with a sustainable business model.

Neither the *Product Stewardship Act 2011* nor the Regulations include provisions or powers that enable the Australian Government to direct co-regulatory arrangements to contract with particular market sectors, or to fund or regulate Australian Disability Enterprises. Several of these enterprises have reported financial difficulties associated with competition for coregulatory arrangement contracts, which has led to a reduction in their e-waste supply volumes. Guaranteed volumes for the social and disability enterprise sector would risk creating a secondary pricing market, and would be a disincentive for all businesses to manage their operations effectively and in a financially sustainable manner.

Several co-regulatory arrangements have strong relationships with the social enterprise sector and currently contract recycling to these organisations. One current practice is utilising social enterprise services to undertake initial dismantling in regional and remote Australia. This practice provides efficiencies where bulky units, such as CRTs from televisions, are costly to transport. The number of these units in the waste stream may currently justify an increase in local dismantling, but as CRT televisions are no longer in production there will be a significant decline in volume over the next several years.

Modern flat screen televisions, which make up an increasing proportion of the e-waste market, are increasingly lighter and can be stacked and transported with relative efficiency. As such, significant expansion of social and disability enterprise in regional and remote areas for initial dismantling must be carefully considered in terms of short and long term demand for this service.

The television and computer industries have delivered on, and even exceeded, their responsibility for e-waste management and in doing so have provided opportunities for social and disability enterprise as well as a valuable public benefit. Greater visibility into industry's support for social enterprise could also be achieved through existing reporting provisions for co-regulatory arrangements under the Regulations.

There are opportunities for state and territory governments to match this effort, by supporting social and disability e-waste recyclers in their jurisdictions through ongoing funding programmes such as small business support and financial planning assistance, to either support the continued viability of these e-waste businesses or to support their transition into other business areas. State and territory governments may be able to assist social and disability e-waste recyclers to access these assistance programmes by ensuring that they are made aware of them.

Renewed support to manage e-waste is required by all levels of government. This includes support for both commercial and social enterprise recyclers, and is vital for the success of the scheme and the stability of the industry as a whole.

Findings

B. It is important that e-waste recyclers continue to monitor industry trends and undertake due diligence in relation to all investment and business decisions. Current trends indicate increasing consolidation of the e-waste recycling industry, which is likely to continue over time.

C. State and territory governments may have options for supporting social and disability e-waste recyclers to remain viable or to support their transition into other business areas, and ensure that these businesses are informed about applicable assistance programmes.

Recommendations

4. The Department and co-regulatory arrangements consider options to provide additional information to the market to assist e-waste businesses in planning.
5. Co-regulatory arrangements better manage the impact of changes to recycling procurement on the recycling industry by providing additional notice of planned changes.
6. Stakeholders comment on the proposal to amend the Regulations to establish a settlement date for target data, after which amendments to import declarations would not be taken into account.
7. Stakeholders comment on the proposal to amend the Regulations to smooth recycling rates between financial years by allowing recycling undertaken in July and August to count towards recycling targets in the previous financial year.
8. Stakeholders comment on the proposal to amend the Regulations to require co-regulatory arrangements to report on their engagement of social and disability enterprises in the context of their annual reports.

7. Reducing the regulatory burden for liable parties

In line with the Australian Government's commitment to reducing regulatory burden on industry, there are a range of scheme metrics where adjustments would have a beneficial outcome for the liable parties who fund the scheme.

7.1. Product codes and conversion factors

The Department's consultation with stakeholders has identified strong support for updates to scheme product codes and conversion factors.

The liability of importers and manufacturers in a financial year is determined by the number of television and computer products they imported or manufactured in the previous financial year. Television and computer products are defined, for the purposes of the scheme, as products which have a product code listed in a Schedule 1B to the Regulations. These were developed during 2012 and apply to products imported or manufactured from 1 July 2012.

The scheme's product codes align with the tariff and statistical codes in the *Combined Australian Customs Tariff Nomenclature and Statistical Classification*, commonly known as the Working Tariff, which is used by Customs and the Australian Bureau of Statistics (ABS) to identify imported products.

Each product code has an associated conversion factor, which is an estimated weighted average weight of products imported under that product code. The purpose of this conversion factor is to enable the data collected by Customs, which records the number of units imported in each shipment, to be converted into an estimated weight of these products. This is necessary because waste management and recycling processes necessarily work in weights rather than units of products. The conversion factors were established following consultation with the television and computer industries, based on information provided on the weight of products imported under each product code.

The Department has commenced work to update product codes and conversion factors and will consult with stakeholders on this work over the coming months. The process for updating product codes and conversion factors will be undertaken in collaboration with ABS and Customs.

This work is being undertaken in two stages:

1. A review and update of the conversion factors to be applied to products imported and manufactured from 1 July 2014.
2. A review of product codes that may result in changes to the product codes (and further changes to conversion factors as required) for products imported and manufactured from 1 July 2015.

In the current round of revisions, the Department is working with Customs and ABS to consider whether the existing product codes need to cover a broader scope of products (by weight or size); new product codes for televisions (move from screen-sized to weight-based); review product codes and conversion factors for products that fall under the "other" category for computers and computer parts and peripherals; and revision of conversion factors for all product codes.

The work is intended to be completed by March 2015, to enable regulatory impact analysis to be undertaken and a decision made on whether to proceed with regulatory amendments prior to commencement of the 2015–16 target period. The success of this work will depend on the willingness of the television and computer industries to provide information to the Department on the weights of products they are importing under the scheme's product codes.

7.2 Calculation of Waste Arising

'Waste arising' represents the amount of additional waste television and computer products that are expected to be generated in Australia in any financial year. The Regulations provide a formula to calculate waste arising, based on the average weight of imports over the past three years and a scaling factor of 0.9.

The formula for waste arising is:

$$\text{Waste arising} = \frac{\text{Total weight of imports over past three years}}{3} \times 0.9$$

The logic of the waste arising formula is that when a product is imported it usually replaces another product, which then becomes waste. Taking the average converted weights of imports over the past three years reduces the impact of annual fluctuations in imports. The scaling factor of 0.9 takes into account that some imported products are subsequently exported, and that not all imported products replace existing products. Modelling undertaken during development of the scheme indicated that this formula was a good proxy for the amount of waste entering the waste stream each year.

It has been suggested that the waste arising formula may no longer fully account for all factors affecting the disposal of computers, notably products listed in Part 4, Item 5.1 of Schedule 1B to the Regulations, into the waste stream in Australia. These factors may include current consumer computer disposal behaviour, the rate of increase in the number of computers in use and the export of used computer systems for reuse.

The number of televisions and computers recycled under the scheme in 2012–13 supports this claim. In 2012–13 the total waste arising in Australia was 137,757 tonnes of televisions and computers, of which 43 per cent (58,857 tonnes) was waste televisions and 57 per cent (78,900 tonnes) was waste computer products. Of this waste stream, 40,813 tonnes of waste were recycled under the scheme, of which 57 per cent (23,103 tonnes) was televisions and 43 per cent (17,710 tonnes) was computers. Another alternative is that the imbalance in collection of televisions and computers in 2012–13 resulted from the ready availability of televisions, due to rapid technological changes in the television and computer industries and a focus on local government-based collections, rather than on an underlying shortage of waste IT equipment.

One proposal put to the Department in late 2013 was that the waste arising formula be amended to include a separate scaling factor for computer equipment subject to relatively high export for reuse, which would be lower than that for televisions, monitors, printers and computer peripherals. The lower scaling factor would be applied when calculating import or manufacture share in relation to imports or manufacture of those products, while the scaling factor of 0.9 would continue to apply when calculating import or manufacture share in relation to imports or manufacture of other products (see subregulation 3.04(4) of the Regulations for information on import or manufacture share).

A scaling factor for computers of 0.6 has been suggested, and the Department is aware that some organisations are undertaking research on issues around disposal of IT equipment that may further inform this consideration. The Department may also consider a scaling factor of 0.8 for computer peripherals.

Issues to be considered in relation to waste arising may include rates of disposal of computer equipment and how this is influenced by consumer behaviour and collection strategies, and the scale of export for reuse, including governance and monitoring issues.

Recommendations

9. The Department continues work to revise the scheme's product codes and conversion factors.
10. Stakeholders comment and provide information on the proposal to consider the waste arising scaling factor applicable to computer systems, and provide any data or research which supports a particular scaling factor.

8. Next steps

As noted in Section 1.2, stakeholders are invited to send written submissions on matters raised in this paper to the Department by 6 February 2015. All submissions will be published on the Department's website. If confidential information is provided in a submission, please clearly mark the information as confidential and provide a redacted version of the submission for publication.

Stakeholders may wish to focus their submissions on the recommendations outlined in this paper. A summary of the recommendation is given in Table 3 below. Stakeholders may also wish to comment on the findings of the review to date, which are summarised in Table 4.

Table 3: Summary of recommendations

Issue	Recommendations
Communication of scheme activities	1. Co-regulatory arrangements strengthen awareness and increase understanding of the scheme's design through targeted communication activities.
Performance of the scheme	2. Stakeholders consider whether regulatory amendment is necessary to drive uptake of AS 5377 and, if so, whether this could be done without increasing the regulatory burden on industry.
Addressing the shortfall in funded recycling	3. Stakeholders provide feedback and the Department undertake regulatory impact analysis on the options outlined for possible adjustments to the target trajectory.
Underpinning sustainable recycling capacity	4. Co-regulatory arrangements to better manage the impact of changes to recycling procurement on the recycling industry by providing additional notice of planned changes. 5. The Department and co-regulatory arrangements consider options to provide additional information to the market to assist e-waste businesses in planning. 6. Stakeholders comment on the proposal to amend the Regulations to establish a settlement date for target data, after which amendments to import declarations would not be taken into account. 7. Stakeholders comment on the proposal to amend the Regulations to smooth recycling rates between financial years by allowing recycling undertaken in July and August to count towards recycling targets in the previous financial year. 8. Stakeholders comment on the proposal to amend the Regulations to require co-regulatory arrangements to report on their engagement of social and disability enterprises in the context of their annual reports.
Reducing the regulatory burden for liable parties	9. The Department continues work to revise the scheme's product codes and conversion factors. 10. Stakeholders comment and provide information on the proposal to consider the waste arising scaling factor applicable to computer systems, and provide any data or research which supports a particular scaling factor.

Table 4: Summary of findings

Issue	Findings
Addressing the shortfall in funded recycling	A. State, territory and local government strategies to manage e-waste outside the NTCRS remain an essential part of e-waste management in Australia. Some are continuing or considering actions to address shortfalls in funded recycling and fluctuations in demand for recycling at state and local levels. Partnering with co-regulatory arrangements may be a cost-effective way for state, territory and local governments to provide local recycling in addition to that funded under the NTCRS.
Underpinning sustainable recycling capacity	B. It is important that e-waste recyclers continue to monitor industry trends and undertake due diligence in relation to all investment and business decisions. Current trends indicate increasing consolidation of the e-waste recycling industry, which is likely to continue over time. C. State and territory governments may have options for supporting social and disability e-waste recyclers to remain viable or to support their transition into other business areas, and ensure that these businesses are informed about applicable assistance programmes.

Appendix: Data Tables

Table A1: Current NTCRS recycling targets (per cent) and proposed new recycling targets for Options 1, 2 and 3.

Financial Year	Current settings (BAU)	Option 1 (48% in 2015–16)	Option 2 (52% in 2015–16)	Option 3 (56% in 2015–16)
2015–16	37	48	52	56
2016–17	40	52	56	58
2017–18	48	56	60	60
2018–19	56	60	62	62
2019–20	64	64	64	64
2020–21	72	68	66	66
2021–22	80	70	68	68
2022–23	80	72	70	70
2023–24	80	74	72	72
2024–25	80	76	74	73
2025–26	80	78	75	74
2026–27	80	80	76	75
2027–28	80	80	78	76
2028–29	80	80	80	77
2029–30	80	80	80	78
2030–31	80	80	80	79
2031–32	80	80	80	80

Table A2: Annual waste arising, BAU recycling targets and recycling targets for Options 1,2 and 3 (tonnes), and total recycling from 2015–16 in tonnes and as a percentage of waste arising.

Financial Year	Waste Arising	Current settings (BAU)	Option 1 (48% in 2015–16)	Option 2 (52% in 2015–16)	Option 3 (56% in 2015–16)
2015–16	135,264.72	50,047.95	64,927.06	70,337.65	75,748.24
2016–17	142,101.16	56,840.46	73,892.60	79,576.65	82,418.67
2017–18	149,653.53	71,833.69	83,805.97	89,792.12	89,792.12
2018–19	158,147.10	88,562.37	94,888.26	98,051.20	98,051.20
2019–20	167,420.20	107,148.93	107,148.93	107,148.93	107,148.93
2020–21	177,331.91	127,678.97	120,585.70	117,039.06	117,039.06
2021–22	188,313.77	150,651.02	131,819.64	128,053.36	128,053.36
2022–23	198,981.04	159,184.83	143,266.35	139,286.73	139,286.73
2023–24	210,252.58	168,202.06	155,586.91	151,381.86	151,381.86
2024–25	222,162.60	177,730.08	168,843.58	164,400.33	162,178.70
2025–26	234,747.29	187,797.83	183,102.88	176,060.46	173,712.99
2026–27	248,044.84	198,435.88	198,435.88	188,514.08	186,033.63
2027–28	262,095.66	209,676.53	209,676.53	204,434.62	199,192.70
2028–29	276,942.40	221,553.92	221,553.92	221,553.92	213,245.65
2029–30	292,630.16	234,104.13	234,104.13	234,104.13	228,251.52
2030–31	309,206.57	247,365.25	247,365.25	247,365.25	244,273.19
2031–32	326,721.97	261,377.57	261,377.57	261,377.57	261,377.57
Total (tonnes)	**3,700,017.48**	**2,718,191.48**	**2,700,381.16**	**2,678,477.92**	**2,657,186.13**
Percentage of waste arising recycled		**73.46**	**72.98**	**72.39**	**71.82**

Table A3: Comparison of Options 1, 2 and 3, with and without waste arising reductions. Options 1–3 with a 10% offset assume that altered scaling factors and conversion factors will see a decrease of 0–10% recycling targets (tonnes).

Financial Year	Current settings (BAU)	Option 1 (48% in 2015–16)	Option 1 (48% in 2015–16) 10% offset	Option 2 (52% in 2015–16)	Option 2 (52% in 2015–16) 10% offset	Option 3 (56% in 2015–16)	Option 3 (56% in 2015–16) 10% offset
2015–16	50,047.95	64,927.06	58,434.36	70,337.65	63,303.89	75,748.24	68,173.42
2016–17	56,840.46	73,892.60	66,503.34	79,576.65	71,618.98	82,418.67	74,176.80
2017–18	71,833.69	83,805.97	75,425.38	89,792.12	80,812.90	89,792.12	80,812.90
2018–19	88,562.37	94,888.26	85,399.43	98,051.20	88,246.08	98,051.20	88,246.08
2019–20	107,148.93	107,148.93	96,434.03	107,148.93	96,434.03	107,148.93	96,434.03
2020–21	127,678.97	120,585.70	108,527.13	117,039.06	105,335.15	117,039.06	105,335.15
2021–22	150,651.02	131,819.64	118,637.67	128,053.36	115,248.03	128,053.36	115,248.03
2022–23	159,184.83	143,266.35	128,939.72	139,286.73	125,358.06	139,286.73	125,358.06
2023–24	168,202.06	155,586.91	140,028.22	151,381.86	136,243.67	151,381.86	136,243.67
2024–25	177,730.08	168,843.58	151,959.22	164,400.33	147,960.29	162,178.70	145,960.83
2025–26	187,797.83	183,102.88	164,792.59	176,060.46	158,454.42	173,712.99	156,341.69
2026–27	198,435.88	198,435.88	178,592.29	188,514.08	169,662.67	186,033.63	167,430.27
2027–28	209,676.53	209,676.53	188,708.88	204,434.62	183,991.15	199,192.70	179,273.43
2028–29	221,553.92	221,553.92	199,398.53	221,553.92	199,398.53	213,245.65	191,921.09
2029–30	234,104.13	234,104.13	210,693.71	234,104.13	210,693.71	228,251.52	205,426.37
2030–31	247,365.25	247,365.25	222,628.73	247,365.25	222,628.73	244,273.19	219,845.87
2031–32	261,377.57	261,377.57	235,239.82	261,377.57	235,239.82	261,377.57	235,239.82
Total tonnes recycled	**2,718,191.47**	**2,700,381.16**	**2,430,343.05**	**2,678,477.92**	**2,410,630.11**	**2,657,186.12**	**2,391,467.51**
Difference to BAU (tonnes recycled)		**-17,810.31**	**-287,848.42**	**-39,713.55**	**-307,561.36**	**-61,005.35**	**-326,723.96**
Difference to BAU (%)		**-0.66**	**-10.59**	**-1.46**	**-11.31**	**-2.24**	**-12.02**

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ENV163.1114