National Waste and Recycling Industry Council

12 April 2024

Committee Secretary
Senate Standing Committees on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Committee Secretary,

The National Waste Recycling Industry Council (NWRIC) thanks the Senate Standing Committee - Environment and Communications for the opportunity to submit its response to the parliamentary inquiry into 'The effectiveness of the Albanese Labor Government's waste reduction and recycling policies in delivering a circular economy'.

NWRIC is the principal business organisation representing international, national, and local companies of the waste and recycling sector. Members' investments cover an extensive range of resource recovery facilities, landfills, firming power facilities and collection services as well a comprehensive range of secondary processing and remanufacturing operations. NWRIC members directly employ more than 18,000 Australians at more than 760 speciality industry owned assets.

To contextualise our submission, NWRIC members are the principal contractors servicing more than 80% of all Australian households with solid and liquid waste and recycling services, as well servicing more than 80% of all Australian commercial, industrial, government, medical and other businesses. In several jurisdictions, this number exceeds 95% service coverage.

It is our position that the Albanese Labor Government's waste reduction and recycling policies must align with its climate change, renewables, energy and industry reform agenda.

The disconnect between these policy areas is resulting in significant disruption to our sector. Without a fundamental realignment by government, waste policy outcomes and targets remain unachievable.

Critically, the impacts of this will certainly lead to unacceptable negative impacts on community amenity, societal liveability, and the environment in forward years.

Progress on the delivery of the National Waste Action Plan is limited.

The National Waste Policy Action Plan (the Plan) was agreed by all State, Territory, and the Federal Governments in 2019. The plan identifies the nation's leading priorities and actions required in terms of the Government's waste reduction and recycling policies. The Plan sets several targets including:

- 80% recovery from all waste streams by 2030.
- halve the amount of organic waste going to landfill by 2023.
- reduce per capita waste generation by 10% by 2030.
- phase out unnecessary and problem plastics by 2025.

The 2024 Biennial review of the plan suggests that the likelihood of reaching these targets is tenuous at best. The review identifies key barriers to reaching these targets, however NWRIC notes that these same barriers have been identified in previous reviews and little action has been taken to address them to date.

Nationally, per capita waste generation has increased by more than 3% against the 2016-17 baseline. Only construction and demolition wastes are performing well in terms of recovery. Of greater significance is the lack of identification or acknowledgement of the community impacts that will arise as a result of the predicted nation's population increase and the fact that each additional person is now generating more than 2.95 tonnes of waste each year.

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As Australia's population grows, the only way to prevent more waste going to landfill will be urgent and concurrent increased investment in both processing infrastructure and developing of long-term end user markets across all recycled material streams. At the same time, Australia must also maximise the benefit of residuals from wastes being generated and the economic and climate change opportunities this delivers.

According to data from Department of Climate Change, Energy, the Environment and Water (DCCEEW) in 2022, Australia generated approximately 63.8 million tonnes of waste per annum. Of this, municipal solid waste was 14.0 million tonnes, representing 22% of the total, commercial and industrial at 20.8 million tonnes or 33% and construction and demolition waste totalled 29.0 million tonnes or 45%. The nation's overall resource recovery rate was 63% or 40.2 million tonnes. Of this, municipal solid waste had a recovery rate of 42%, commercial and industrial was 58% and construction and demolition was 78%.

What governments data fails to report is the constant flat lining that is repeatedly being reported but is not being addressed in terms of the actual diversion of commercial and industrial and municipal solid waste from their baselines of 2016-17. More than 23.5 million tonnes per annum (historical) is residual waste that still require managing. Also missing from the data is information in terms of the liquid, regulated or hazardous wastes that the nation generates or is having to be managed. As a result, the waste policy framework ignores any discussion or focus on these community and industry generated streams.

To address these persistent and emerging challenges, NWRIC is advocating for comprehensive policy reform that aligns with government policies on climate change, renewables energy, and industry policies.

Solutions for reform.

First and foremost, Australia's narrative in terms of waste, recycling and reuse must be reformed.

Wastes generated by society must be recognised in government policy as being a genuine resource that all must recovered, recycled, and reused in their entirety across all jurisdictions. The federal government's performance in terms of its waste policy currently fails to reflect this.

There remains a constant disconnect in terms of state regulatory approval processes, public policy interference and the lack of long-term planning for the siting of waste and recycling infrastructure. Policies set in place at the federal level are failing to be realised result due to conflicts at a state government level and other political agendas disrupting industry's investment decisions. These must be resolved.

Resource recovery national policy and setting of future actions must be expanded to include the energy recovery opportunity, by acknowledging how residual waste streams could add value to Australia's broader climate change agenda. This can only be achieved by government acknowledging the inherent calorific value that resides in all solid and liquid waste streams that is currently not being captured to its true capability in terms of delivering government's 'net zero' emissions agenda.

Importantly, population increase and the impacts in terms of waste generation and local recycling capacity needs to become a central item for consideration. Currently, data presented by government looks backward rather that analysing the future projections and understanding what that means in terms of the nation's capacity to build and have the appropriate infrastructure needed in place.

That core element is missing from government's policy agenda and provides the missing catalyst to realising genuine community change whist supporting yet not conflicting with government's major climate change and renewable energy reform priorities.

As addressed in this submission, NWRIC provides the following recommendations for reforms to address the Albanese Governments stalled waste policy settings.

The effectiveness of the Albanese Labor Government's waste reduction and recycling policies in delivering a circular economy'.

- The Albanese Labor Government's waste reduction and recycling policies must be revised to align with its climate change, renewables energy, and industry reform agenda.

The effectiveness of the Albanese Labor Government's waste reduction and recycling policies in delivering a circular economy, with reference to:

(a) recycling export regulations imposed through the Recycling and Waste Reduction Act 2020, noting the:

i. ramifications for Australia's international and domestic commitments and obligations under the Act,

ii. benefits and consequences of imposing the requirements on the Australian industry, and

iii. interaction and efficacy of the community and economic benefits of the legislation.

- The waste exports regulation be amended to reflect it being a government regulation on 'secondary commodity exports' and not be referred to as 'waste' in legislation.

- The proposed cost recovery model for export permits be rejected for government to recover its cost associated with industry applications to export tradeable secondary commodities.

- Government's export exemption licence process be formally reviewed to reflect a more efficient and effective governance framework for trading secondary commodities.

- Government export regulations be reformed to reflect 'fit for purpose' in terms of their 'international trading circularity' that both supports local manufacturing of recyclables but eliminates the dysfunction and anti-competitive trading framework that has arisen which is directly inhibiting Australia's resource recovery capability.

(b) the efficacy and progress of circular economy deliverables

- The federal government formally investigate regulating unprocessed ferrous scrap metal exports to significantly reduce Australia's greenhouse gas emissions, to preserve and create new Australian jobs, to help secure the future of the Australian recycling and sovereign steel industries and to enhance Australia's overall environmental duty of care.

- The government takes a national leadership position by encouraging slower states to implement food organics and garden organics (FOGO) mandates and diversion from landfill.

- The Australian National Audit Office be commissioned to conduct an analysis of the Recycling Modernisation Fund (RMF) and the use of its funds to identify the actual additional local remanufacturing capacity that has been generated and funded by the Australian taxpayer and to identify the number of projects that have been announced but not yet realised or that have been cancelled.

- That the RMF funding model be amended to advance local investment into all three waste streams, including liquid wastes, to advance improved resource recovery and create new local markets and uptakes.

(c) progress on the implementation of mandated product stewardship schemes

- That Australia's product stewardship schemes be formally reviewed to ensure they are fully funded, properly mandated and that each scheme annually presents to government a report on the efficacy of their scheme, its real performance data, and measurement matrix against claimed scheme outcomes.

- The Australian government rapidly establish a mandatory, fit-for-purpose product stewardship scheme for Lithium-Ion batteries, lose or embedded, and the immediate ban of indiscriminate and unauthorised disposal of these forms of batteries in all waste and recycling bins.

(d) any other related matters.

- The Government's waste policy framework and Safeguard Mechanism, ACCU Scheme and Climate Change Reforms need to be aligned to promote a circular economy and maintain effective landfill methane abatement incentivisation.

- A national approach to landfill levy pricing, the adoption of the levy portability principle by all jurisdictions, increased distribution of levy for industry and market development and more transparent management of levy funds are areas the federal government should lead on reform.

- Waste to Energy, and Waste Derived Fuels must be prioritised for all residual streams both solid and liquid sources where this will deliver environmental benefits.

The following pages to our submission provide detailed analysis and solutions to the problems and opportunities being addressed by the committee in its review. We trust these matters are of relevance and interest to the important deliberations at hand.

Council members again thank the committee for undertaking this critically important review on behalf of our industry and makes itself available at any time to provide additional or other information as may be required.

Yours Sincerely

National Waste Recycling Industry Council

Rick Ralph
Chief Executive Officer

The National Waste Recycling Industry Council provides the following observations and recommendations in response to:

The effectiveness of the Albanese Labor Government's waste reduction and recycling policies in delivering a circular economy, with reference to:

(a) recycling export regulations imposed through the Recycling and Waste Reduction Act 2020, noting the:

- *ramifications for Australia's international and domestic commitments and obligations under the Act,*
- *benefits and consequences of imposing the requirements on the Australian industry, and*
- *interaction and efficacy of the community and economic benefits of the legislation.*

The system was not broken.

It was a political myth, perpetrated by the federal government that gave justification to interfere in an orderly secondary commodity trading market.

Over the past two years NWRIC has consistently and repeatedly, provided evidence demonstrating there is no need for the introduction of this unjustifiable, and needless government regulatory disruption to our industry's trading market, particularly as it impacts its mixed paper and cardboard secondary commodities, as its proposed 'Rule' will only apply to exporters and international trades.

NWRIC members have invested significantly in adding new infrastructure that underpin and support the onshoring of local remanufacturing capability, but regrettably not all commodities being collected by the sector have local markets. Examples of this shortfall apply to plastic films, some other plastics, mixed paper and cardboard as well used tyres that are processed for alternate fuels.

Industry has invested more than $672 million into building local capacity, representing 66% of all the funds spent to date to support the legislation whereas federal funding has only been $114.5 million.[1]

Government continues to perpetrate a falsehood to the Australian community, that the waste and recycling industry is exporting a 'waste with contamination' not as it is traded being genuine secondary feedstock commodity as justification for its regulatory intervention. That narrative continues to undermine community confidence in recycling and has had profound impacts across the sector.

Further, government continues to avoid responding to industry requests to explain how important secondary traded commodities, are designated as a 'waste' with contamination' when being traded, after these same products having been used and separated at either a home or business, are then placed into in a speciality recycling container, collected by specialised recycling vehicles and delivered to fully

[1] https://www.dcceew.gov.au/environment/protection/waste/how-we-manage-waste/data-hub/data-insights/national-data-viewer

regulated and licenced recycling facilities where the product, is then processed for trade to an agreed contract quality specification and government designates it as a 'waste' item for export.

Prior to the recycling export regulations imposed through the *Recycling and Waste Reduction Act 2020* (the regulations) coming into effect, Australia actively and effectively participated in a global market, both exporting and importing glass, plastics, tyres, paper and cardboard. These commodities were recovered by NWRIC members through kerbside collections and commercial waste services before being traded in domestic and international markets. Materials processed internationally are often purchased and returned to Australian consumers as finished products such as packaging.

In 2021-22, Australia exported about 4.41 Mt of recovered materials with a value of $4.36 billion, playing an essential role in the world's circular economy.

This operating environment enabled Australia to participate at a global circular economy scale. Australia had access to domestic and international avenues for processing its secondary commodities, profit was generated from the export of commodities and consumer needs could be met through the importation of refined products.

The disruption to business caused by government regulating an orderly commodities trading market has and remains to be profound, leading to a fundamental disruption of the nation's recycling system. The Commonwealth's own 2019 Decision Regulation Impact Statement "Phasing out exports of waste plastic, paper, glass and tyres" confirmed it was not in the nation's best interests to include paper and cardboard in waste export bans.

Regulating the export of paper and cardboard also gives direct commercial favour to limited domestic processors who stand to benefit from significantly reduced market competition, directly resulting in additional costs to the industry when trading internationally.

This now presents significant risk to the fundamentals of Australia's recycling system more broadly.

Governments export regulations have placed Australia in a precarious economic and environmental position.

The regulations are inconsistent with Australia's domestic capacity to process the regulated commodities and source internal markets for the quantity and material types of all recovered materials for recycling.

Australia's capacity to process the regulated commodities domestically falls significantly short of the quantities we produce (Table 1). For instance, in the 2020-21 financial year, Australia consumed 3.8 million tonnes of plastic, but only recovered 371,000 tonnes, of which only 212k tonnes was reprocessed in Australia,.[2] Similarly, in the same financial year, Australia generated 5.8 million tonnes of paper and cardboard waste, but only recovered 62% on Australian soil.[3] Without access to the international export market to enable the recovery of the remaining products, tonnes of high-quality glass, tyres, plastic, paper and cardboard commodities will end up in landfill. This reality will make it very difficult for the Australian Government to achieve its target of reaching an average of 80% recovery rate from all waste streams by 2030.[4]

[2] Australian Plastic Flows and Fates Study 2020-21 - National Report prepared by Blue Environment

[3] National Waste Report 2022 prepared by Blue Environment

[4] https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-policy-action-plan

Table 1. Tonnes of glass, tyres, plastic, cardboard and paper processed domestically and internationally each year prior. Data sourced from National Waste Report 2020 in thousands of tonnes

Commodity	Waste Tonnes Generated	Tonnes processed domestically	Tonnes processed internationally
Glass	1,160	672	16
Tyres	465	33	259
Plastic	2,540	138	187
Paper & Cardboard	5,920	2,417	1,112

In addition to adverse environmental impacts, NWRIC contends that the regulations will result in local market failure and long-term market disruption, particularly with respect to the regulation of some plastics as well as paper and cardboard exports.

The *Decision Regulation Impact Statement: Phasing out exports of waste plastic, paper, glass and tyres*[5] published by the former Department of Agriculture, Water and Environment in 2019 identified that regulating the export of paper and cardboard would result in a net loss of $257 million to the Australian economy every year. This level of economic impact is unacceptable. It is deeply concerning that the Australian Government is pressing ahead with regulating the export of paper and cardboard commodities from 1 July 2024 despite the projected economic impacts.

The domestic market for end-user recycled products is limited and competitive. The cost of processing these commodities domestically is significantly higher compared to internationally, which is reflected in the purchase price for these products.

There remain no restrictions on the importation of new or recycled tyres, glass, plastics, paper and cardboard materials to Australia. This creates a situation where domestic producers struggle to find markets for their products as there is little incentive for buyers to purchase local over imported products.

The environmental and economic consequences of the regulations are significant and of great concern to NWRIC members. The pace of this legislative and regulatory reform is inconsistent with our processing capacity and end-user markets. It also fundamentally ignores all efforts to look at the front end of the waste generation system in terms of what is coming into Australia, where a product is made, or if the imported materials have received local subsidies funded by their governments to support that manufacturer and trade internationally.

The process for obtaining export exemptions is totally unworkable.

Under the regulations, exemptions can be granted to export glass, tyres, plastic, paper and cardboard commodities. However, the process of obtaining an exemption is unclear and cumbersome, and the parameters of the exemptions are commercially unfeasible.

[5] https://oia.pmc.gov.au/sites/default/files/posts/2020/03/phasing_out_exports_of_waste_plastic_paper_glass_and_tyres_-_decision_regulation_impact_statement.pdf

Exemptions can only be granted for a single type of waste material and for a maximum of 12 months. This means that for businesses seeking to export multiple commodity types, multiple exemptions must be obtained. If a buyer changes an order after an exemption has been granted, the exemption is no longer valid, and a new application must be submitted. In the context of a dynamic global market, this process places significant strain on our local industry and international trading partners.

Under the regulations, glass, tyres, plastic, paper and cardboard commodities must also meet strict quality criteria to be eligible for an exemption to export. These criteria do not reflect the market demand for these commodities and there are now large quantities of these products that can no longer be sold on the international market due to the strict criteria, despite there being market demand for the products. This narrow application of exemptions increases the likelihood of significant volumes of glass, tyres, plastic, paper and cardboard ending up in Australian landfills.

There is also limited guidance available to businesses about the process of obtaining an exemption. The documentation required to support an application is extensive and must include details on all negotiated arrangements between parties and a 'fit and proper person' check. Council members have expressed serious concerns about the requirement to provide details of confidential commercial agreements with the Department of Climate Change, Energy, the Environment and Water (DCCEEW). In the context of large corporations, the application of the 'fit and proper person' provision is also unclear.

Exemption applications are considered by DCCEEW on behalf of the Minister for the Environment on a case-by-case basis. Given the unclear and cumbersome nature of the application process, NWRIC is concerned that there is unreasonable discretionary power afforded to Departmental officers responsible for assessing applications.

Timeframes for implementation are unrealistic, proposed recycling tax untenable.

The proposed Recycling and Waste Reduction (Export – Paper and Cardboard) Rules 2023 are due to come into effect on 1 July 2024. Industry must amend their operations to comply with the Rules within 90 days of the Rules coming into effect.

At the time of writing, the new Rules have not been published or made available by other means to industry. We are extremely concerned that there is insufficient time for our members and the industry more broadly to understand and implement the new Rules, including altering forward purchase contracts with trading partners, within the mandated time frame.

The volume of paper and cardboard currently exported is at least eight times higher than the combined total of glass, tyres and plastic that was exported prior to these commodities becoming regulated. Council argues that it is unreasonable to expect compliance with the new Rules within such a short time frame without significant market disruption and large volumes of paper and cardboard ultimately being diverted to landfill due to insufficient domestic capacity to process these high-quality commodities.

Further, Governments proposed 'cost recovery 'model of imposing service fees onto exporters is untenable. Council submits the cost recovery on waste exports is both unnecessary and a further cost impost to the Australian recycling industry which is subject to international pricing parity and market impacts. Coupled with the looming regulation of exported recycled Paper and Cardboard from 1 July 2024 to the detriment of our large established trading of this valuable commodity from Australia the proposed "recycling tax" in the form of a cost recovery on all regulated recyclables exported will be a significant blow to the sustainability of the recycling industry across Australia and it is not appropriate to proceed with this measure.

NWRIC Recommendations

- **The waste exports regulation be amended to reflect it being a government regulation on secondary commodity exports and be not referred to as being a 'waste'.**
- **The proposed cost recovery model be rejected to recover industry applications to export tradeable commodities.**
- **The export exemption licence process be formally reviewed to reflect a more efficient and effective governance framework for trading.**
- **The export regulations be reformed to reflect 'fit for purpose' in terms of the 'International trading circularity' that supports local manufacturing of recyclables but eliminates the disfunction and anti-competitive trading framework that has arisen which is now inhibiting Australia's resource recovery capability.**

B) the efficacy and progress of circular economy deliverables

1 Green Steel and Recycling

The Green Steel Industry and scrap metal remains an untapped opportunity to strengthen Australia's circular economy.

Regulating the export of unprocessed ferrous scrap metal would deliver important environmental, social and economic benefits for Australia and internationally.

Australia's steel industry has prioritised the increased use of scrap metal, supporting the nation's drive towards 'Green Steel'. Increasing scrap metal use in the steel making process directly decreases greenhouse gas emissions produced in the iron and steelmaking process compared to using virgin materials.

Australia exports an average of 1.07 million tonnes of scrap metal each year, resulting a domestic shortage of scrap metal available for local manufacturers. For example, BlueScope's Port Kembla Steelworks and Infrabuild' s Sydney steel mill in 2022 were forced to source just over 500,000 tonnes of ferrous scrap from a combination of overseas sources.

In collaboration with the Australian Steel Institute, the NWRIC commissioned Australian Economic Advocacy Solutions (AEAS) in 2022 to review the value proposition for the government to regulate unprocessed ferrous scrap metal exports to being an enabler for the Australian steel industry to access additional locally sourced materials[6]. Based on AEAS modelling, an export regulation would deliver a saving of 1.2 million tonnes in greenhouse gas emissions for Australian steel mills. This is equivalent to the avoided emissions produced by 353 wind turbines running 24 hours a day for a full year, or carbon sequestered equivalent to 21,495,612 trees being grown for more than 10 years.

Regulating the export of unprocessed ferrous scrap metal would also support and attract local steel making investment, where currently over 130,000 direct and 180,000 indirect steel industry jobs are located, and approximately $27 billion in industry contribution to the economy. For every 10,000 tonnes of unprocessed ferrous scrap metal, the scrap metal processors create approximately $4.84 million in value add and an additional 37.2 jobs. By contrast, unprocessed ferrous scrap metal exporting only creates approximately $1.34 million in value add and 10.3 jobs.

Currently, an estimated 268,000 to 321,000 tonnes of attached waste materials such as glass, plastics, textiles and tyres are exported with unprocessed ferrous scrap materials. This is significantly undermining the policy intent of the export regulations on these commodities. By regulating the export

[66] https://www.nwric.com.au/download/1180/?tmstv=1699313198
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of unprocessed ferrous scrap metal, the Australian Government would have greater control over the export of these regulated commodities.

Importantly, Australia already possesses enough processing capacity to absorb the 1.07 million tonnes of unprocessed ferrous scrap metal that is exported each year. This means there is no need for government investment to support industry to comply with regulating the export of this material. In fact, if all the unprocessed ferrous scrap currently exported was processed in Australia, it is estimated that state government treasuries would earn an additional $33.7 million to $48.7 million in state landfill waste levies. These levies could be used to cover the costs of enforcing the regulation.

NWRIC believes that regulating the export of unprocessed ferrous scrap metal presents a significant economic and environmental opportunity for Australia that is consistent with the Australian Government's commitment to growing and strengthening our circular economy.

2 Accelerate food and organics (FOGO) recycling and maintain landfill methane abatement.

A core element to any policy review should be the federal government taking a national leadership position by encouraging slower states to implement FOGO mandates. Currently, SA has well-established FOGO for metropolitan Adelaide and NSW and Victoria have 2030 state-wide FOGO mandates. Mandating the separation and collection of organic waste at its source across the nation, with strong enforcement of regulations, will reduce waste going to landfills.

Diverting organic material from landfill is key to avoiding landfill methane generation and enabling enhanced recovery of its nutrients, energy, and heat. Facilities such as anaerobic digestion can turn food wastes and other organic materials into valuable resources, including biogas and a nutrient-rich by-product known as digestate, supporting a circular economy, decarbonisation goals and national energy security. The pace of investment in FOGO infrastructure has and remains inconsistent amongst the states. Australia has an opportunity to massively expand bioenergy from waste production[7], in turn driving increased renewable electricity firming together with renewable gas and liquid fuel opportunities. The agricultural sector would benefit from domestically produced, circular digestates to displace a portion of mineral fertiliser use with productivity, soil carbon and water capacity benefits. Investment in such facilities must be accelerated, along with commercial incentives for off-takers, to realise the benefits available.

Alongside this, landfills will continue to play a critical role in the capture of methane arising from the natural breakdown of organic materials in landfill. Where FOGO systems are in place, a portion of contaminated organics typically remains in residual disposed waste and, when waste receipt to landfill ceases, landfill gas typically continues to be produced for several decades. Methane has potent short-term warming impacts and preventing its release to the atmosphere through effective capture and abatement is one of the most important actions that can be taken to avoid near-term climate change. *Government policy needs to continue to effectively incentivise maximised landfill methane abatement.*

3 The efficacy of the Recycling Modernisation Fund remains uncertain and must be expanded.

To support local industry capacity building, in response to the export ban on glass, tyres, plastic, paper and cardboard commodities, Federal, State and Territory governments established the Recycling Modernisation Fund (RMF). The RMF seeks to expand Australia's capacity to sort, process and remanufacture glass, tyres, plastics, paper and cardboard. Business can apply to have up to 50% of

[7] https://arena.gov.au/knowledge-bank/australias-bioenergy-roadmap-report/

eligible project costs covered by the Fund. The Fund is projected to see over $1 billion in investment in recycling infrastructure. RMF projects already announced are slated to increase Australia's annual processing capacity by over one million tonnes.

Despite this substantial investment, NWRIC argues that there needs to be greater transparency regarding the additional local market capacity that has been achieved for the regulated commodities. NWRIC's internal analysis of the projects funded to date suggest that almost 65% of funded projects have been focused on upgrading existing infrastructure and less than 35% has been allocated towards creating new additional internal markets.

NWRIC advocates that the RMF needs to clarify the investments to differentiate the following:

1. Proposed tonnes of new processes or processing upgrades / improvements that divert waste from landfill – i.e. new recycling / volumes being captured.
2. Actual tonnes of additional capacity or processing upgrades / improvements that improve the quality of product recovered for reuse domestically or export (i.e. not new recycling / recovered volumes).
3. Actual tonnes of new manufacturing plants or plant upgrades / improvements that deliver additional local remanufacturing capacity in Australia utilising recovered tonnes that were previously exported.
4. Actual tonnes of new manufacturing plants or plant upgrades / improvements that deliver additional remanufacturing capacity in Australia replacing virgin inputs.

NWRIC encourages the Australian Government to conduct a value analysis of the cost of government funding through the RMF for each of the above categories to determine the overall costs and benefits to the Australian waste and recycling and manufacturing sectors and the environment.

A value analysis will clarify if the RMF investment is both creating value for the use of government funding and contributing to achieving the key targets and objectives of increasing resource recovery, diversion of waste from landfill and domestic re-use as part of a circular economy in Australia.

In addition, NWRIC encourages the Australian Government to consider expanding the scope of projects funded through the RMF model beyond the regulated export commodities to cover a wider range of materials that need enhanced domestic processing, to increase local re-manufacturing capacity that addresses all waste streams in order to realise greater domestic economic and climate change benefits.

Changing the scope will open new expanded opportunities that more broadly align with total waste diversion targets adding to new local economic growth and new local job creation.

NWRIC Recommendations

- **The federal government formally investigate regulating unprocessed ferrous scrap metal exports to significantly reduce Australia's greenhouse gas emissions, to preserve and create new Australian jobs, to help shore up the future of the Australian recycling and sovereign steel industries and to enhance Australia's overall environmental duty of care.**
- **The government takes a national leadership position by encouraging slower states to implement FOGO mandates and diversion from landfill.**
- **The Australian National Audit Office be commissioned to conduct an analysis of the RMF and the use of its funds to identify the actual additional local remanufacturing capacity that has been generated and funded by the Australian Taxpayer and to identify the number of projects that have been announced but not yet realised or that have been cancelled.**

- **That the RMF funding model be amended to advance local investment into all three waste streams including liquid wastes to advance landfill diversion and create new local markets and uptakes**

(c) progress on the implementation of mandated product stewardship schemes

Australia's product stewardship schemes design leaves significant room for reform. For product stewardships schemes to truly be a pillar of Australia's circular economy, these schemes must be properly funded and fully regulated.

The effectiveness of Australia's product stewardship schemes is unclear. In 2021, the Australian Government committed $18.6 million for 24 new projects. However, NWRIC contends that the latest annual report from the Product Stewardship Centre of Excellence[8] fails to meaningfully demonstrate the social, economic, and environmental outcomes being derived from these projects.

Most schemes have benefited from substantial upfront investment in public-facing facilities (e.g. container drop-off points) and marketing focused on changing community behaviour. However, there has been little investment focused on supporting industry to process and find end-user markets for materials collected through these schemes. Australia lacks both the capacity to process the quantities of materials recovered through the schemes and the end-user markets to sell recycled products. Many of the materials captured in these schemes are manufactured internationally. Local businesses looking to process materials collected through product stewardship schemes must find consumers for their products in a market flooded with cheap international imports. This means that there are very few examples of truly effective end-to-end product stewardship schemes, despite the schemes often heralded as a huge success in strengthening Australia's circular economy.

The scope of current product stewardship schemes is narrow with most targeting packaging materials and smaller consumer electronic items. NWRIC contends that future schemes should target waste streams that are genuinely challenging and hard to manage, such as Lithium -ion batteries, solar panels, and other emerging wastes.

NWRIC urges the Committee to recommend a comprehensive review of Australia's product stewardships schemes to assess their effectiveness and opportunities for improvement.

Case study 1

Australia's Gold Standard Oil Product Stewardship Scheme is now compromised.

The Product Stewardship for Oil (PSO) program of 2011 is Australia only mandatory product stewardship scheme. The remainder are either Co – Regulatory arrangements or Government accredited industry – led schemes.

There has been a lack of substantive progress with the fourth review of the Product Stewardship for Oil Scheme (PSO) which commenced in 2020. The waste / recycling of lube oil sector was engaged for four years to try to progress the fourth PSO review. This resulted in no substantial resolution on key issues, despite industry input to inform the terms of reference.

Government has recently confirmed it intends undertaking a fifth independent review despite no progress on the previous 4 reviews and that is now due for completion by December 2024.

[8] https://stewardshipexcellence.com.au/wp-content/uploads/2024/01/PSCoE-Annual-Report-2023-web.pdf

The sector has engaged cooperatively and provided a raft of information repeatedly to government officials and to at least three separate independent consultants. The last of which involved Deloitte's who sought and were given access to members' sensitive commercial information.

The PSO is held up as a product stewardship scheme that largely works. Unfortunately, however, the lack of action with PSO reviews has seen these settings becoming increasingly fragile. It is a matter of fact that the very small levy applied to new lubricants, and the levy benefits for the sector, have remained largely stagnant for over 20 years.

Most of the used oil refinery infrastructure in Australia is now reaching its end of operational lifespans and facing increased maintenance turnaround, which impacts on waste oil processing and an escalation in company operating expenses. Without the PSO support that enables re-investment, the industry now faces significant risks that could reverse the progress of the PSO made over the past 20 years.

As result the sector is currently witnessing a number of these risks unfold in various regions across the country - particularly Tasmania, Western Australia, and the ACT. The risks include the closure of recycling facilities, the lack of collections infrastructure, local job losses, and the increased regional waste disposal to landfill, and potentially for serious environmental impacts.

In Tasmania, the PSO scheme is now insufficient to pull waste oil to the mainland where recycling facilities exist. The severe glut in Tasmania has been caused by a range of government and commercial decisions, partly driven by public pressure, that have resulted in a virtual end to the use of recycled oil in traditional energy applications. It is ironic that public and government interest in protecting the environment has led Tasmania to stop using its waste oil for energy and is now potentially creating a far larger environmental issue.

Our members no longer have the capacity to store used oil and have had to cease providing this service.

Industry members are particularly concerned that stopping collections will lead to the illegal dumping of waste oil with its consequent negative effects on our environment.

Western Australia is experiencing a glut caused by a perfect storm of demand destruction for recycled oil used in fuel oil energy applications, an increase in economic and mining activity, and an increase in maintenance shuts due to aging infrastructure on the existing used oil refinery that is operating at full capacity. The largest refinery in Australia, Northern Oil in Gladstone, has routinely now no capacity to store any additional lube oil for re-refining.

Indeed, all five significant waste oil processing plants nationwide have frequently been at capacity. The fact remains that the more the Australian economy grows the bigger the problem becomes as the nation's mining and support enterprises generate more waste oil and currently there is nowhere to store or process, leading to deleterious outcomes for the economy and environment.

Ironically, evidence also suggests used lube oil volumes have continued to increase despite increasing electrification of vehicles and other parts of the economy. The waste oil recycling industry plays a crucial role in waste management, resource recovery, and reduction of greenhouse gas emissions. Without adequate support of the PSO, the sector faces a very real possibility of regressing and losing the significant progress it has invested in towards a more sustainable future.

There are significant benefits to the environment from re-refining waste oil.

- Every 1 litre of recycled lube oil results in a 2.26 kg CO2 reduction
- Waste oil is collected from every mainland state and territory.

- In 2022-2023, industry members recycled circa 140 million litres of waste oil, reducing CO2 emissions by around 190,000 tonnes.

In the last decade, Southern Oil Recyclers have recycled just over 1 billion litres of waste lube oil in Australia.

Case Study 2

Urgent intervention of lithium-ion batteries is required.

The waste and recycling industry across Australia is gravely concerned about the increased frequency and severity of fires in industry assets, facilities and vehicles caused by batteries, in particular lithium-ion (Li-ion) batteries.

In 2022, Fire and Rescue NSW attended 171 incidents in 2022, and 285 in 2023 where lithium-ion batteries or devices were involved in ignition or failure, representing a 66% increase in incidents year-on-year, and a rise in frequency from about 1 in every 100 fires attended in 2022 to 1 in every 76 fires in 2023.[9]

Data from Fire and Rescue NSW also shows that the organisation attended 177 fire incidents in 2023 involving waste trucks, waste collection and waste management, representing an increase of 43% from 2022.[10]

While the risks posed by the indiscriminate disposal of batteries are now well-known, the existing product stewardship scheme for batteries – B-cycle – has failed to meaningfully pivot to contribute to addressing these risks.

On 31 July 2023, NWRIC wrote to the Ministers for Environment and Water, Emergency Management, Employment and Workplace Relations and Home Affairs, urging the Ministers to take swift and meaningful action to address the increasing number of fires caused by Li-ion batteries.

In our letter, NWRIC highlighted findings from industry investigations into battery-caused fires, by its members. The findings confirm.

- An average of at least three fires per day are directly attributable to batteries that are disposed of into bins serviced by NWRIC members.
- Batteries are often disposed of while still embedded in everyday objects (such as vacuum cleaners, vapes, power tools and even shopping trolleys). Batteries become damaged while being transported or being processed, resulting in thermal energy runaway resulting in powerful ignition sources that are difficult to contain.
- Battery-related fires have increased in severity and intensity waste transfer vehicles, recycling facilities, transfer stations and landfills, placing thousands of hard-working Australians at risk.
- The escalation in fire risk has resulted in increased insurance premiums or refusal to insure some businesses, placing a significant financial burden on businesses.
- The dangers of batteries and their incorrect disposal is simply not widely understood or safeguarded against across Australia.

Council made six (6) specific recommendations in correspondence to address these alarming statistics:

[9] https://www.fire.nsw.gov.au/page.php?id=9404
[10] https://www.fire.nsw.gov.au/page.php?id=9404

1. A national communications program is developed and implemented across TV, Radio and social media based on simple messaging to highlight to households and businesses that it is unsafe to put batteries of any kind in any bin including red lid general waste, yellow lid recycling and all commercial and industrial bins.
2. The implementation of regulations in all states and territories classifying Li-ion batteries as a Dangerous Good in any quantity especially in their end-of-life disposal stage.
3. Once classified as a Dangerous Good, they are then banned by all states, territories and local governments from disposal in household kerbside, commercial, industrial, construction and demolition waste and recycling bins
4. Disposal of these Dangerous Goods and all batteries is only to approved Drop Off Points per the national B Cycler Scheme.
5. That penalties are implemented for non-compliance under state and territory regulation with the end-of life disposal requirements for batteries to acknowledge the serious risks and consequences offenders place upon human health, the environment, workplace safety and property.
6. The Federal Government introduce regulation that mandates a regulated battery product stewardship program fully funded by all manufacturers and importers of Li-ion batteries or from products that are imported into Australia that contain Li-ion batteries in any form.

On the 17th of October 2023 the Minister for the Environment and Water responded to concerns, with commitments that the Department of Climate Change, Energy, the Environment and Water (DCCEEW) will work closely with industry on a range of initiatives focused on addressing the risk of battery-caused fires.

Regrettably, the Minister and her Department ignored all industry provided insights and tangible recommendations provided in our correspondence.

In addition to our recommendations above, NWRIC fully supports the recommendations outlined in the ACCC's *Lithium-ion batteries and consumer product safety* report[11] released in 2023. Key recommendations in this report included:

- Disposal / End of Life - the Australian Government should continue to develop infrastructure, regulation and supporting policies to enable the safe and efficient collection and recycling of Li-ion batteries.
- (Regulatory landscape): State and territory governments should build a fit-for-purpose, nationally consistent regulatory framework for electrical consumer products, supported by the Australian Government.
- (Regulations): State and territory electrical safety regulators should introduce, administer, and enforce clear requirements for the testing, labelling transportation and storage of Li-ion batteries and products containing Li-ion batteries. These requirements should be consistent across all jurisdictions.

Despite the provision that sound and feasible recommendations were made from NWRIC, the ACCC and other industry bodies, there remains a distinct lack of real and urgent action being taken by governments across Australia to address this serious community and worker safety, environmental and economic issue.

NWRIC Recommendations

- **That Australia's product stewardship schemes be formally reviewed to ensure they are fully funded, properly mandated and that each scheme annually presents to government**

[11] https://www.accc.gov.au/about-us/publications/lithium-ion-batteries-and-consumer-product-safety

a report on the efficacy of each scheme, its real performance data, and measurement matrix against claimed scheme outcomes.

- **The Committee recommend the urgent establishment of a mandatory, fit-for-purpose product stewardship scheme for all batteries, lose, or embedded and the immediate ban of indiscriminate and unauthorised disposal of batteries in all waste and recycling bins.**

d. any other related matters.

1 The Albanese Government's Waste policy platform, Safeguard Mechanism, ACCU Scheme and Climate Change Reforms must align.

Australia is facing a genuine crisis in terms of the challenges of its waste policy agenda and aligning this with the nation's population and economic growth projections. The long-term efficacy of policy is under significant risk of failure due to government's broader reforms now being rushed through as rapid climate action is sought, specifically as this relates to the Safeguard Mechanism and ACCU Scheme regulatory changes.

NWRIC advocates a formal policy reform process must be undertaken that allows an interface of waste policy with the government's ongoing climate change, renewables, energy, and industry reforms. Aligned policies across these areas should ensure that a circular economy is supported and also that the best possible outcomes are encouraged within each level of the waste hierarchy.

Council members represent 65% of Australia's waste operations. Our members have quantified their emissions from operations in landfills, resource recovery and recycling facilities, and other collections and processing to understand their collective contribution to greenhouse emission reductions and forecast their future path to net zero emissions and track progress.[12]

Avoided emissions generated from operations and activities can be quantified from the diversion of material from landfill and the displacement of virgin materials, including fossil fuels. These are attributed to:

- alternative fuel production
- provision of recycled materials to manufacturing, locally and internationally
- provision of recycled oils, solvents, aggregates
- production of nutrients from recycled organics.

By 2030, greenhouse emissions from Australia's waste and recycling industry are projected to reduce to around 4 Mt CO2-e from 10 Mt per annum today and will likely continue trending down towards zero by 2050.

Currently, Australia's waste and recycling sector recovers 63% of the total waste generated. As we seek to increase that to meet Australia's recycling targets, expanded carbon and energy policies that recognise and facilitate the multiple carbon benefits arising from recycling and recovery across supply chains are required. These policies should recognise full life cycle benefits, not only avoided landfill emissions.

It is also essential that we do not inadvertently undermine current emission reduction measures under proposed policy changes. Australia is a current leader in waste emission reduction across time due to its landfill methane abatement incentivisation policies. If inappropriately handled, upcoming changes under the Safeguard Mechanism and the ACCU Scheme have the capacity to unravel and fundamentally

[12] https://www.nwric.com.au/resources/

undermine the industry's long achieved standards to the detriment of our climate. For example, over the past 20 years, our member, LMS Energy, has alone been responsible for preventing more than 50,000,000 tonnes of carbon equivalents from entering our atmosphere through its landfill gas capture and destruction investments. With high, ongoing costs arising for the maintenance and expansion of these critical projects, mechanisms that continue to effectively incentivise such landfill gas capture need to be maintained.

Members' investments and broader industry achievements are at genuine risk of being undermined by the government's proposed ACCU Scheme reforms unless current settings and industry certainty needs are properly considered. Coupled with Safeguard Mechanism regulatory changes, the risks to industry investment and the costs that will be passed through to the community are profound.

It is critical the Albanese Government's waste framework works in situ with, and be aligned to, that broader policy reform framework. Failure to do so will result in a system failure and loss of industry confidence, investment and jobs will result.

2 National Approach needed to Landfill Levies.

Waste or landfill levies are a key regulatory tool used to improve recycling and fund environmental liabilities from waste generation. They have a significant effect on both the commercial environment of nearly every waste and recycling business and community behaviour. They also generate significant amounts of funds for each jurisdiction. Therefore, carefully considered levy regulations nationwide are essential to advancing Australia towards a circular economy.

In 2019, NWRIC undertook a thorough review in 2019 in terms of the status of waste and landfill levies across Australia.[13]

The review examined by jurisdiction, how much the levies are, what waste types are levied, where and when do they apply, how they are administered, the amount of funds raised each year and how these funds are spent.

It also analysed the impacts and benefits of these levies on waste and recycling outcomes across Australia and identified a number of issues that need to be addressed urgently to ensure the levies achieve what they were set out to do and not drive waste down the hierarchy.

Waste/landfill levies were first introduced in 1971 by NSW at a $0.56 per tonne. Since then, South Australia, Victoria, Western Australia and Queensland have introduced levies. In 2018-19 rates ranged in price from $0 to $250 with an estimated $1.13 billion raised. In 2019-20 this is expected to increase to $1.54 billion with the introduction of the waste levy in Queensland. This will equate to approximately $58 per capita per year, up from $39 per capita per year in 2018-19.

Of the $1.13 billion funds raised in 2018-19, only an estimated $282 million or 25 per cent nationally was reinvested into activities relating to waste and recycling, state EPA's or climate change (in the case of Victoria). At a state level the reinvestment rate of the levy ranged from 10.9 per cent in NSW, 25 per cent in WA, 66 per cent in Victoria to 73 per cent in South Australia.

Funds not reinvested were either retained in consolidated revenue (as in the case of NSW, WA and QLD) or retained in nominated funds such as Victoria's Sustainability Fund, SA's Green Industries Fund or SA's Environment Protection Fund where some of the funds were invested in various non-waste or recycling related environmental activities.

[13] https://www.nwric.com.au/download/242/

In 2019-20, it was estimated that of the $1.54 billion in funds raised, around $569 million or 37 per cent would be reinvested into waste and recycling activities. This increase can largely be attributed to the Queensland government's commitment to reinvest over 70 per cent of the levy, with local councils receiving 105 per cent of their levy contribution. Most of that was paid out to local government to offset households being impacted by the levy. The result being that Queensland has lagged behind all other states in terms of FOGO roll out, seen an increase in waste going to landfill and a lack of innovation and reluctance by industry to invest given there are no genuine incentives in terms of policy that are landfill diversion enablers for municipal solid waste.

On the positive side, the levies have increased resource recovery nationally over time and enabled the commercial development of local resource recovery businesses including material recovery facilities; processing facilities for plastics, paper, cardboard, glass, timber, organics; alternate waste treatment plants; and waste-to-energy facilities for fuel manufacture, thermal and electricity generation.

On the negative side, differentials in levies across regions and between states has created a levy avoidance industry, both legal and illegal resulting in potentially recyclable material ending up in landfill, and hazardous material being disposed of inappropriately. This has become big business particularly in NSW and WA due to the significant variability of levy rates for solid, hazardous and liquid wastes. It is estimated that between 1.5 million to three million tonnes of waste has been transported per annum either significant distances to landfills where levies do not apply, dumped into the environment, stockpiled or in the case of hazardous wastes hidden or mislabelled to reduce or avoid state levies.

Key learnings from this analysis are the vastly different approaches states and territories take to levies. From how much is charged between regions and states; what wastes are levied (i.e. solid, liquid, hazardous or prescribed) and how they are defined; where liability for the levy is charged; how the levy is administered and how levy funds are managed, reinvested into activities to improve the waste and recycling practices and reported on.

Of major concern is the lack of transparency in most jurisdictions of how much funds are collected per year, how and where they are invested in waste and recycling activities and assessment of the effectiveness of the investment in achieving waste and recycling strategies and targets.

NWRIC believes there is an urgent need to reform the current state levy structures, pricing, administration, and investment management.

3 Waste to Energy, and Waste Derived Fuels must be prioritised for all residual streams both solid and liquid sources.

Australia's existing landfill capacity is running out. NSW alone creates around one-third of Australia's total waste with volumes, forecast to grow from 21 Mt in 2021 to nearly 37 Mt by 2041.[14]

In all developed nations, a suite of long-term disposal solutions is paramount to realising their government's 'zero waste' and 'climate change' policies. However, in Australia as of April 2024, there are no energy from waste facilities in operation in Australia, although several projects are in the works. This year, Veolia will be responsible for the operation and maintenance of Australia's first energy from waste facilities: the Kwinana Waste to Energy Project and East Rockingham Resource Recovery Facility in Western Australia.

NWRIC members operate hundreds of these highly complex and innovative energy plants globally, but Australia remains void of these important assets.

[14] https://www.soe.epa.nsw.gov.au/all-themes/human-settlement/waste-and-recycling

In terms of Process Engineered Fuel (PEF) as a finished product, from select dry non-recyclable material and not from municipal waste joint industry investments in South Australia and New South Wales are using more than 400,000 tonnes of commercial and industrial and construction and demolition waste residuals, supplying alternative fuels to cement kilns. Importantly, significantly contributing to the nations avoided greenhouse gas emissions but the Albanese government waste policy fails to genuinely address this.

Regrettably in terms of used tyres, their remains no local markets for the engineered fuel and more than 220,000 tonnes of collected processed tyres are being exported to be used in industrial processes displacing fossil-based fuels.

Australian governments and communities must accept that, despite all best endeavours to build a local remanufacturing sector for the materials we recover, acknowledgement that a 'circular economy' is 'global in scope' but that our first and most desirable outcome, is domestic recycling into the same of similar grade products. This enables a domestic circular economy, job creation and a nationally reduced carbon footprint.

The second element is the acknowledgement of an 'international circularity' concept. This is where recovered materials are exported overseas to be remanufactured into high end products (e.g. the export of high-quality mixed paper & cardboard, or plastics recovered that have no or limited Australian reprocessing capacity). These commodities can be reprocessed and be used as resource internationally that ultimately then also re-enter Australia again as finished goods.

The Albanese government's waste policy fails to identify or realise the real value of residuals from waste and its processes in terms of the opportunity these could have in terms of reducing the nations emissions and of providing important baseload power. Energy from waste is crucial for governments to meet landfill diversion targets. The technology is safe and internationally proven. In addition to carbon saving considerations, energy from waste allows for an estimated additional 13,000 tonnes of recyclable metals recovery each year from a typical 400,000-tonne facility. In terms of baseload power, it is a key enabler for industrial precincts. As example a 400,000-tonne per annum plant has the capacity to produces 40 MW of baseload power which is enough for more than 60,000 homes.

4 Sustainable renewable fuels

The transition to a net-zero economy through the recycling and waste resource recovery supply chain is a commercially driven, technically viable and results in good public policy outcomes.

However, current Commonwealth sustainable fuel / renewable energy policy settings largely focus on picking winners by prioritising renewables over the use of waste as a fuel source. The current government narrative 'makes perfect the enemy of the good'. Waste is being seen as a negative and not a genuine contributor to Australia's net zero ambitions.

The Albanese government's renewables policy, including its waste policy is void of all serious or genuine discussion, or acknowledgement that look upon residuals from waste as a carbon abatement opportunity.

Waste-derived fuel has a lower emission profile than fossil fuels while also avoiding the pressure on land use that biological-based fuels might create. Decisions about the eligibility of renewable/sustainable fuels should recognise independent whole of life-cycle assessments.

The potential for recycling and resource efficiency including better use of residuals from waste to contribute to emissions reduction and the path to net zero has not been harnessed in Australia. The

National Greenhouse and Energy Reporting System and the Safeguard Mechanism currently overlook life cycle assessments, which limits recognition of the recycling sector's contribution to a net zero future.

In the waste and recycling sectors, only landfill gas capture and organic recycling are regarded as emission reduction activities, disregarding significant opportunities for emission avoidance and lower embodied energy that recycling and resource efficiency presents.

Case study: Tyre-Derived Fuels

End-of-life tyres present both a waste management challenge and an opportunity for resource recovery. Tyre-derived fuel provides an alternative energy resource to replace fossil fuels such as gas, coal or oil in industrial applications such as cement kilns, electricity generation or industrial process heat.

It is estimated that 150,000 tonnes of tyre-derived fuel avoid 174,000 tonnes of carbon-dioxide emissions compared to brown coal. The greenhouse gas emissions savings from tyre-derived fuel are favourable when compared against several biological fuel sources: like biologic-based fuel, there are emissions costs associated with refining and transporting tyre-derived fuel. However, unlike biologic sources, there are significant emission savings that come from unlocking the steel and carbon black in tyre stockpiles, rather than sending to landfill and putrefaction.

Policy settings regarding renewable/sustainable fuels should align with international best practice, particularly regarding Sustainable Aviation Fuel (SAF). SAF requirements should be consistent with the internationally recognised Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) framework, administered by the International Civil Aviation Organisation, which recognises waste-derived aviation fuel as a sustainable aviation fuel that meets the CORSIA sustainability criteria.

5 Liquid Fuels and Energy

The suite of renewable fuel options that can help the transition to net zero is much broader than only green hydrogen or biologic based feedstocks. The focus on reducing our carbon footprint must be on sustainability, scalability, and cost effectiveness. It is critical to governments climate change agenda that it support a range of fuels—including biological-based and waste-derived feedstocks—as part of the sustainable fuels mix as all policy levers will be required to get to 'net zero'.

To achieve this transformed economy, every activity or product need not result in zero or negative carbon emissions, but rather the sum of all activity and product emissions must be zero or negative.

Waste-derived fuels have a lower emission profile than fossil fuels while also avoiding the pressure on land use that biological-based fuels might create. Decisions about the eligibility of renewable/sustainable fuels should recognise independent life-cycle assessments.

The potential for recycling and resource efficiency to contribute to emissions reduction and the path to net zero has not been harnessed in Australia. The National Greenhouse and Energy Reporting System and the Safeguard Mechanism currently overlook life cycle assessments, which limits recognition of the recycling sector's contribution to a net zero future.

In the waste and recycling sectors, only landfill gas capture and organic recycling are regarded as emission reduction activities, disregarding significant opportunities for emission avoidance and lower embodied energy that recycling and concomitant resource efficiency presents.

Case study Southern Oil's steam over iron reforming and chemical looping combustion hydrogen process

Southern Oil, through its wholly owned subsidiary Syn Bio, is working with the CSIRO to produce sustainable hydrogen via a combination of steam over iron reforming and chemical looping combustion technologies.

The propriety process uses waste gases (such as those generated by Southern Oil's refineries) to produce cheap and sustainable hydrogen. After five years of research, design, and independent evaluation, Southern Oil has approved the design and build of a ten-kilogram-per-hour pilot plant. If successful, scaling and commercialising this process will result in significant emission reductions, arguably better than green hydrogen in a full life-cycle analysis.

NWRIC Recommendations

- **The Government's waste policy framework and the Safeguard Mechanism, ACCU Scheme and Climate Change Reforms need to be aligned to promote a circular economy and maintain effective landfill gas abatement incentivisation.**
- **A national approach to levy pricing, the adoption of the levy portability principle by all jurisdictions, and more transparent management of levy funds are areas the federal government should lead on reform.**
- **Waste to Energy, and Waste Derived Fuels must be prioritised for all residual streams both solid and liquid sources.**

END