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EU-Australia Leadership Forum

Sectoral Policy Workshop

**Progressing the Circular Economy:
European and Australian Perspectives on
the Plastics Problem**

Background Papers

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Helen Millicer has completed an extensive Churchill Trust sponsored tour of Europe, UK and SE Asia investigating leading strategies, programs and facilities for a more circular economy, with a focus on plastics. Through her consulting practice, Helen has supported clients such as the ACT, NSW and Victorian Governments, local/regional groups and industry bodies on sustainability strategies, market research and program design for growth and greater impact. In government and industry, and most recently at the Vinyl Council of Australia, Helen has successfully led in industry innovation, strategic planning, change management and communications.



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Rethinking Australia's Approach to Material Use and Value

By Helen Millicer

Background on Australia

Australia is an island nation of 25 million people living in an area similar in size to the United States, with 2.66 people per km² (the United Kingdom, by contrast, has 266 per km²). Australia has a bicameral democratic government system modelled on the United Kingdom with three tiers (537 local councils, six states and two territories, and Federal Parliament in Canberra).

Rich from use and export of its primary resources including oil and gas around the world, and especially to Asia, Australia has become a relatively affluent country with a growing multicultural population. While endowed with such resources Australia does not use policies nor programs to support value-adding over export of raw materials, and hence Australia does not have large refineries, plastics or chemicals by-product manufacturing, as do other oil/gas rich countries including Netherlands and Malaysia. Consequently, over the last 20 years a number of companies have shifted production to lower cost countries and/or where such incentives are provided, largely in South East Asia.

Australians can be characterised as law-abiding, living in a well-organised society, with moderate environmental and labour standards. Australians will take initiative to find solutions and collaborate across government, industry and community. This is illustrated by the considerable growth in renewable energy generation by industry and individuals despite the division within the political sphere. Australians are increasingly concerned and active in addressing sustainable energy and recycling, including plastics.

Many decades of increasing affluence and expansion, with minimal impact of the Global Financial Crisis has meant that waste generation has grown, recycling rates have plateaued and China's import restrictions have hit hard. As in many countries around the world, material that is not recycled goes almost entirely to relatively cheap landfill. The country faces some significant challenges and opportunities to maintain recycling rates, let alone shift to a more circular economy, and has to rethink its approach to material use and value.

Policy Reviews and Circular Economy

As in many countries China's National Sword import restrictions have prompted reviews of many policies, strategies and programs. In Australia this has occurred at both state and national levels, with attention focused on packaging in particular. The April 2018 meeting of the Australian Council of Governments (COAG) issued an important communiqué on the review of waste policies and the adoption of targets for all packaging to be recyclable by 2025 (similar to the UK's Plastics Pact).

In Australia these revisions are starting to emerge. The Federal Government has just released a Discussion Paper¹ preparing for an update of its 2009 National Waste Policy by the end of 2018 and the Australian Packaging Covenant Organisation (APCO) is currently forming its action plans for various material formats via industry material working groups².

In many respects, policy, programs and collaborations on waste and resource recovery in Australia are several years behind those of leading nations in the EU such as Netherlands and Germany. These countries have been adopting an increasingly wide array of measures since the mid-1990s to lift recycling and reprocessing rates for both packaging and durable products and reduce virgin resource consumption. The Netherlands adopted its Circular Economy Strategy in 2016³ and has been proactive in coordinating collections, sorting, reprocessing, banning and using Green Procurement Guidelines in tenders. In Australia, South Australia is the only state with a policy statement on the circular economy.

The EU Commission Circular Economy Plastics Strategy released in January and adopted by the EU Parliament in May 2018 contains this Vision Statement:

“A smart, innovative and sustainable plastics industry, where design and production fully respects the needs of reuse, repair, and recycling, brings growth and jobs to Europe and helps cut EU's greenhouse gas emissions and dependence on imported fossil fuels.”⁴

This statement shows why the world's first Circular Economy Strategy and this most recent strategy on plastics has been met with support from most quarters; it deals with environment and jobs as well as national economic security.

In Australia the Federal Government has historically taken little responsibility for waste and recycling, producing a few policies, albeit without funding allocations, and there is increasing public pressure for the Federal Government to engage on national systemic issues and provide consistency and direction. This would put it more in line with leading countries that enjoy high rates of recycling and more circular use of resources.

Most of the responsibility for policies, legislation, financial and regulatory incentives sit with the states, and responsibility for residential collections, and sometimes sorting facilities and landfills lies with local government. Victoria has taken a lead in conducting a review of all landfills and most resource recovery facilities by producing the nation's first Statewide Infrastructure Plan in 2017. Like many countries, Australia has only recently been mapping landfills and improving planning of resource infrastructure. It is yet to plan and manage resource use, reuse and disposal as it does with water, transport and urban development.

¹ <http://www.environment.gov.au/system/files/consultations/0258ae81-1408-42f6-862f-d5468f84d2a3/files/discussion-paper-updating-2009-nwp.pdf>

² <https://www.packagingcovenant.org.au/>

³ <https://www.government.nl/topics/circular-economy/documents>

⁴ <http://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy.pdf>

The most significant role in the area of material management for the Federal Government is defined by the Federal Product Stewardship Act 2011, which is currently under review⁵. Approved schemes include the Computer and TV Product Stewardship Scheme. The first round for additional schemes has just closed, however due to high thresholds for approval there have been no additional schemes registered since its inception. This being said, there are several voluntary and partial schemes operated by industry consortia for products such as paint, packaging, tyres and mobile phones. There is an active exchange between various product stewardship schemes around the world and Australia is closely involved in this dialogue.

Until recently, Australia's major investments and focus has largely been on residential collections and sorting infrastructure. This means that our approach has been largely technical, capital intensive and certainly more structured than most nations in Asia and the Pacific.

It appears that Australia, through State and Local Governments, has invested more than EU countries in public education campaigns around residential kerbside bins, litter prevention and public bin/disposal systems. There is a greater onus and responsibility upon the public for litter disposal, as opposed to industry bearing the responsibility as is evident through EU policies and legislation. Litter is influenced by cultural habits and/or management systems as evident by the differences in Netherlands, Singapore and Australia. Litter on land and in waterways and oceans is becoming a potent issue in Australia, the EU, Asia and the Pacific, with a global campaign from environmental groups forming for Plastic Free Oceans with a range of globally binding targets to be presented to the UN Environment Assembly in October 2018.

Globally, and this includes Australia, we have only recently begun to create 'market pull' programs to support local use of materials. Australia has to catch up to other countries in the EU in realising that waste, like water, flows to the lowest point, and therefore that it is important to use the widest variety of levers available (see Figure 1) to correct for market failure on the costs and benefits of keeping materials, particularly plastics, circulating in the economy and preventing them from landfill.

Like many countries, Australia is coming to terms with the fact that its current systems and policies are not adequate for the 21st century and need to change. For example, there are now serious conversations in state and local councils about how to move away from comingled kerbside recycling bin collections (for all packaging) to distinct separate product collections, similar to systems in the Netherlands, Belgium or Wales. As set out in Figure 1 below we are coming to realise that our strategies, contracts, pricing, systems and programs have prioritised cost and efficiency and volume for collections for export over quality and adding value for end products. Certainly, most countries have been linear in their approach to product and materials management and not adopted systemic levers that result in high productivity and circularity.

⁵ <http://www.environment.gov.au/protection/waste-resource-recovery/product-stewardship/consultation-review-ps-act-incl-ntcrs>

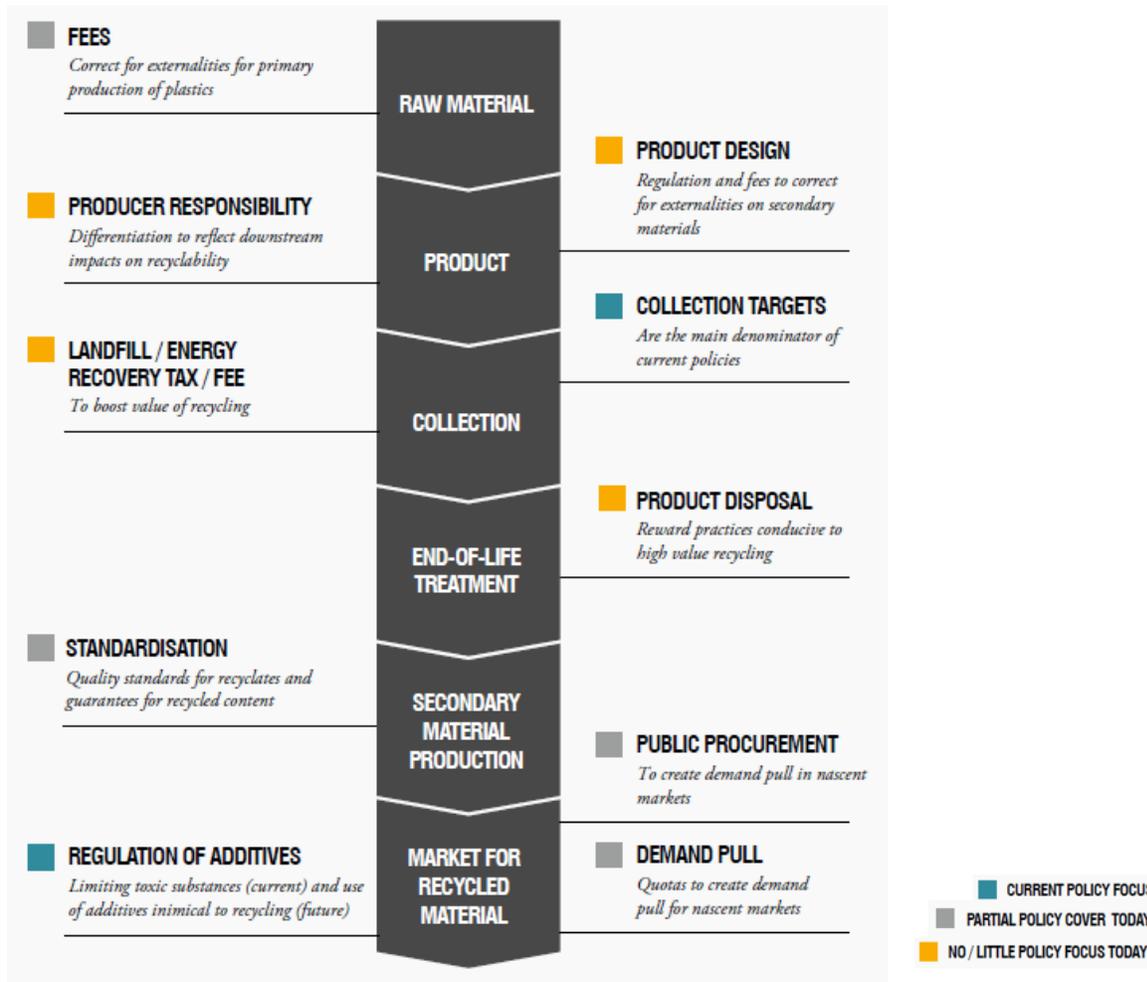


Figure 1. Analysis of current EU policies that only cover parts of the barriers to high value plastics recycling (Source: *Material Economics*, 2018, p 95)

A significant aspect of the EU Commission’s development of its Circular Economy Strategy in 2015-16, was its decision that a more nuanced approach is required to correct market failure for plastics recovery and circularity (for packaging and durables) in comparison to other materials such as metals and glass. They recognised the structural challenges due to plastics being a by-product from oil/gas in a highly manipulated supply chain, that are comparatively low cost to produce and lightweight to dispose, with the consequence that they are deemed too low value to collect and prevent from becoming litter or landfilled. They also appreciated that the chemical complexity and diversity of plastics required circularity to be addressed within specific polymer-supply chains (PVC, PS, PET).

Australian governments at all levels have still a way to go in engaging with manufacturers, related industry groups and training institutions (not only the waste industry of landfill operators, collectors and sorters) to develop policies, strategies, investments, skills, business models and collaborative projects for a more circular economy.

In Australia, plastics are generally regarded as problematic or pollution, packaging or litter (durables are largely forgotten), and not materials of value. Furthermore, there are too few professional and inter-governmental links between Australia and its regional neighbours in the Pacific and Asia on manufacturing and reprocessing standards (such as EuCertPlast⁶), levies, certification schemes, regulations and measures for a more circular economy and litter cleanup.

It is clear that the EU and Asia are increasing dialogue on measures to manage resource flows, standards and environmental impacts. China’s import restrictions are supporting industry and government measures in Europe for higher reprocessing standards as well as addressing China’s internal environmental problems of air and land pollution. The European Commission and countries such as the Netherlands and Germany see export revenue and growth opportunities in assisting other countries move to a more circular economy.

Australia’s Plastics Recycling and Reprocessing

Australia’s patterns in plastics consumption and recycling is typical of an affluent western country. Our consumption is large for our population of 25 million (around 3,000,000 tonnes per year) and for a decade our plastics recycling rate has been low at around 12-14% (329,000 tonnes). The annual review of plastics recycling shows that Australia has become increasingly reliant and focused on easy bulk exports of plastics (often mixed plastic packaging bales) while letting local reprocessing languish.⁷ This is contrary to trends in the EU where more levers have been used, resulting in increased growth in local reprocessing over the last 5-10 years.

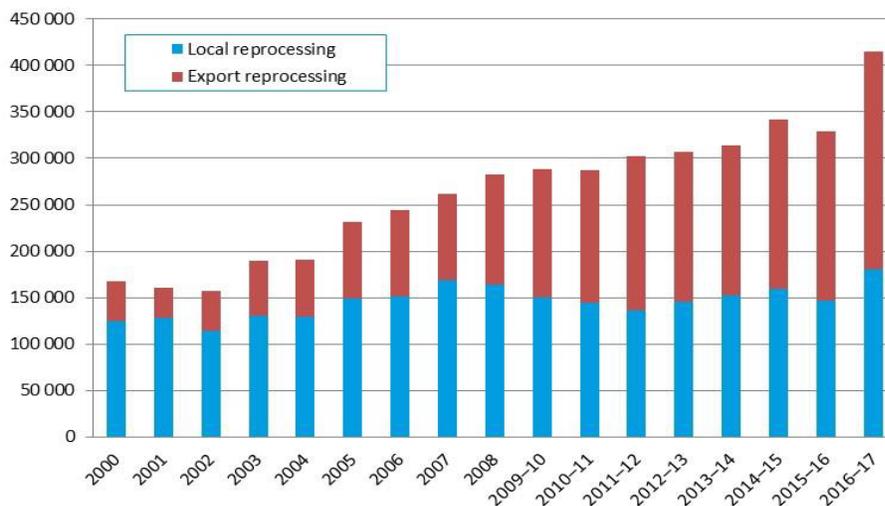


Figure 2. Annual Australian plastics recycling 2000 – 2016-17 (Source: 2016-17 Australian Plastics Recycling Survey)

⁶ <https://www.eucertplast.eu/>

⁷ <http://www.environment.gov.au/protection/waste-resource-recovery/publications/australian-plastics-recycling-survey-report>

Figure 2 shows that Australia has not been building its local recycling and reprocessing capacity. In addition, conversations with Australian manufacturers reveal their frustration at the increasing inability to access quality recycled material from within Australia. In comparison to neighbouring Asian manufacturers, Australian manufacturers struggle to obtain reliable plastic recyclate and consequently have a higher environmental footprint.

Elsewhere in the report it indicates that packaging accounts for 40% of plastics consumed each year in Australia; the remaining 60% encompasses durable products, like garden furniture, hose, pipe and flooring. Unfortunately, there are currently no government or industry strategies, collections, separate drop off or programs dealing with durable plastic products in Australia.

In relation to use, recycling and circularity of all plastics, Australia performs poorly, with high use and low reprocessing at around 12%, whereas countries such as the Netherlands and the UK reach 33%, and Germany 38%. Unless it introduces a range of measures as used in EU and parts of SE Asia (and recommended in Figure 1) Australia risks seeing already low recycling rates plummet, larger quantities going to landfill and starving its manufacturers of quality recyclate. If the latter happens Australia may enter into a viscous cycle of ever lower recycling rates and economic insecurity.

While Australia is to be commended for this annual survey, there is minimal data on jobs, economic impact, growth opportunities and threats to this industry in Australia or the region. Likewise, there is little data on the opportunity cost and impact of high rates of landfill and of litter or current strategies and policies. Where Plastics Europe is able to produce an annual survey of jobs, companies, by polymer and industry,⁸ no comparable readily accessible and analysed information exists for Australia or the Australia/SE Asia and Pacific region.

Australia and this region of SE Asia/Pacific therefore faces a number of structural, organisational and environmental issues. Data, information, joint investments and collaboration on projects, changes to cost structures and systems, and shared skills and knowledge are part of the solution.

Plastics are fundamental to modern life but also highly problematic, and solutions must be found to address the environmental, economic and social challenges for this highly refined material.

⁸ <https://www.plasticseurope.org/en/resources/publications/498-plasticseurope-annual-review-2017-2018>

Mitigating the Plastics Challenge for Future Generations

By Dr Mervyn Jones

Background

Our ability to cope with plastic waste is already overwhelmed according to the United Nations⁹. Only 9% of the 9 billion tonnes of plastic the world has ever produced has been recycled. Most ends up in landfills, dumps or in the environment. If current consumption patterns and waste management practices continue, then by 2050 there will be around 12 billion tonnes of plastic litter in landfills and the environment. More than 60 countries have introduced bans and levies to curb single-use plastic waste with plastic bags and foamed plastic products the main focus of government action.

The 'plastics challenge' has been catapulted into the consciousness of governments, businesses and the general public over the last 18 months due to a number of factors. Increasing awareness and media attention around the impact that plastic items (particularly in marine environments) due to their persistence and general degradation over time has captured global attention. Single Use Plastic (SUP) items represent about half of all marine litter items found on European beaches by counts. The ten most found SUP items represent 86% of all SUP items (ie, 43% of all marine litter items found on European beaches by count). Fishing gear containing plastics accounts for another 27% of marine litter items found on European beaches.

Around 25.8 million tonnes of plastic waste are generated in Europe every year. Less than 30% is collected for recycling whilst landfilling and incineration rates of plastic waste remain high, 31% and 39% respectively. In October 2017, China announced it was banning the import of certain types of plastic waste from developed countries including the EU, United States, Australia and Japan. Globally (and in the EU) the demand for plastics will rise. In the EU, the potential for recycling plastic waste remains largely unexploited. Reuse and recycling of end-of-life plastics is very low, particularly in comparison with other materials such as paper, glass or metals.

Plastics and plastic packaging are however an integral and important part of the global economy. It is important to recognise the vital role that plastics and packaging play in protecting, preserving, preventing waste and conveying consumer information. The plastics sector employs 1.5 million people and generated a turnover of EUR 340 billion in 2015. It is therefore imperative that addressing the 'plastics challenge' involves a carefully considered and evidence-based approach that; avoids conflating issues around plastics, creating unintended consequences, targeting action, and recognising the roles and responsibilities of all players in the plastics loop.

⁹ Single-Use Plastics: A Roadmap for Sustainability. UN Environment, 2018

Challenges

Whether it's the United Nations, the European Union, national governments, the media or thinktanks like the Ellen MacArthur Foundation¹⁰, the challenges identified around plastics can be distilled into either design and manufacturing issues; use and disposal behaviours; and, collection and recycling barriers.

The design and manufacture of single use plastic packaging often impedes either effective collection and/or recycling, because of various factors including, but not limited to, choice of plastic as the material of choice, function, composition of packaging, shape and size. The way a plastic is designed to behave dictates its suitability for recycling – not whether it is fossil-based or bio-based.

Marine plastics pollution and plastic litter are symptoms of plastic items leaking out of the plastic loop, for example, through disposal behaviour such as littering. Poor understanding of disposal choices by consumers also plays a large part in material leaking outside of the plastics loop and the point of disposal is also important, for example, in the household, at work or on-the-go. Littering happens mainly on-the-go.

Some polymers whilst technically recyclable (for example, PVC, EPS and PS) are not widely used or widely recycled in Europe and so end up in landfill or energy from waste. Problems arise within the collections, particularly with regards to availability and type of collection (separated/mixed, household, on-the-go, commercial) and the recycling infrastructure. These might be directly or indirectly be because of technical or simply, economic reasons.

Technical and mechanical recycling issues can arise through the format, shape and size of items. Small items like disposable cutlery and straws and composite forms, like crisp packets and pouches, typically end up in general waste or potentially contaminating other dry recyclable or organic composting streams. Plastics recycling systems are driven by the economics and are subject to externalities like volatile pricing. The fixed costs of recycling caused significant problems for processors during the 2008 recession and oil price crash and second drop in 2014¹¹ and this in turn impacted on current capacity to reprocess plastics, as evident in the UK.

A further challenge, linked to both disposal and recycling quality, is contamination. The increasing use of bio-based plastic (biodegradable and compostable) is not being matched by the efficacy of collection and recycling systems. In most European systems, biodegradable plastics currently cannot be recycled along with non-biodegradable plastic and must be dealt with separately from non-biodegradable plastic streams. If not, it causes problems during the recycling process for both the biodegradable and the non-biodegradable forms.

¹⁰ Ellen MacArthur Foundation. The New Plastics Economy: Catalysing Action. 2017

¹¹ Why did oil prices drop so much in 2014? Greg DePersio, Updated 2018

Current EU Initiatives

Plastic waste and packaging recovery has been addressed until now through the Waste Framework Directive¹² and the Directive on Packaging and Packaging Waste¹³ that have increased the targets for recovery and recycling of packaging waste and reduced the consumption of lightweight plastic carrier bags. Marine litter has also been addressed through the Marine Strategy Framework Directive¹⁴ and the Urban Waste Water Treatment Directive¹⁵. The implementation of these Directives (and the Circular Economy Action Plan) however varies in practice across the 28 Member States.

In May 2018 the European Commission proposed a new Directive specifically on the reduction of the impact of certain plastic products on the (marine) environment¹⁶. The initiative is in line with the objectives of the Circular Economy policy and announced in the EU Plastics Strategy launched in January 2018, as part of the key actions planned under the Circular Economy Action Plan.

The proposal identifies specific measures for specific items relating to marine plastics littering (Table 1). It leaves the bulk of the plastic items placed on the market within the sphere of existing regulations. Therefore, if the wider plastics challenges identified above are to be addressed, then a heavy reliance on voluntary agreements and producer responsibility is to be anticipated. The EU is calling on stakeholders to come forward with voluntary pledges to boost the uptake of recycled plastics. Industry has already responded. For instance, PlasticsEurope has set out its vision¹⁷ and in the UK, grocery retailers, brands and the public sector have signed up to the UK Plastics Pact¹⁸.

Other initiatives such as Deposit Return Schemes are becoming popular mechanisms for ensuring proper disposal. In Germany, return and recycling rates for PET bottles are at 98.5%, compared to 43-54% from normal household recycling systems. In contrast, the U.K. currently does not have a deposit return scheme despite a public poll finding that 60% would support a deposit return scheme¹⁹.

¹² Directive 2008/98/EC of the European Parliament and the Council of 19 November 2008 on waste and repealing certain directives (OJ L 312, 22.11.2008) and revisions

¹³ Directive 1994/62/EEC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste (OJ L 365 31.12.1994) and revisions

¹⁴ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (OJ L 164 25.6.2008).

¹⁵ Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment (OJ L 135, 30.5.1991) and revisions.

¹⁶ European Commission. The reduction of the impact of certain plastic products on the environment. COM/2018/340 final - 2018/0172 (COD)

¹⁷ [Plastics 2030](#) – PlasticsEurope’s Voluntary Commitment to increase circularity and resource efficiency

¹⁸ www.wrap.org.uk/content/the-uk-plastics-pact

¹⁹ A public consultation on a deposit return scheme in Scotland only for beverage containers closes on 25 September 2018.

Table 1. EU proposed measures for single use items

	Consumption reduction	Market restriction	Product design requirement	Marking requirements	EPR	Separate collection objective	Awareness raising measures
Food containers	X				X		X
Cups for beverages	X				X		X
Cotton bud sticks		X					
Cutlery, plates, stirrers, straws		X					
Sticks for balloons		X					
Balloons				X	X		X
Packets & wrappers					X		X
Beverage containers, caps & lids			X		X		X
Beverage bottles			X		X	X	X
Tobacco product filters					X		X
Sanitary items: - Wet wipes				X	X		X
- Sanitary towels				X			X
Lightweight plastic carrier bags					X		X
Fishing gear					X		X

Action Areas

The voluntary approaches will need to focus on specific actions in order to demonstrate measurable progress towards addressing the plastics challenge. At a practical level this might be to consider whether:

- the (single use) item is avoidable, unnecessary or replaceable by a reuse or alternative option;
- the item is unable to be reused, recycled or fully composted effectively with the existing collection and recycling infrastructure;
- there is a material alternative available that creates no additional environmental impact;
- the plastic item can be easily leaked out of the system for example, through disposal behaviour or mismanagement such as frequent littering; and/or
- the item frequently or easily leads to contamination issues or inefficient recycling within the collection and recycling system.

For many items like single use cups, bags, food trays, best before tags or tamper-evidence strips to name a few, there are alternative materials available (typically paper or card) that make the use of plastic unnecessary or would reduce the impacts. The issue becomes one of availability, economics and ultimately, choice. For other items their role may be deemed unnecessary. Stirrers and sachets are examples of these. In these instances, eliminating or reducing the use of unnecessary items is the most desirable outcome.



Based on the responses to the above, actions could then be allocated to the relevant stakeholders around avoidance, design, recycling and crucially education in line with the measures for marine plastics litter in Table 1.

The EU-Australia Leadership Forum recommendations for EU-Australia cooperation on Circular Economy and Plastics should consider how best to address the common challenges and what common actions can contribute measurably towards mitigating the plastics challenge for future generations.