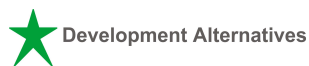
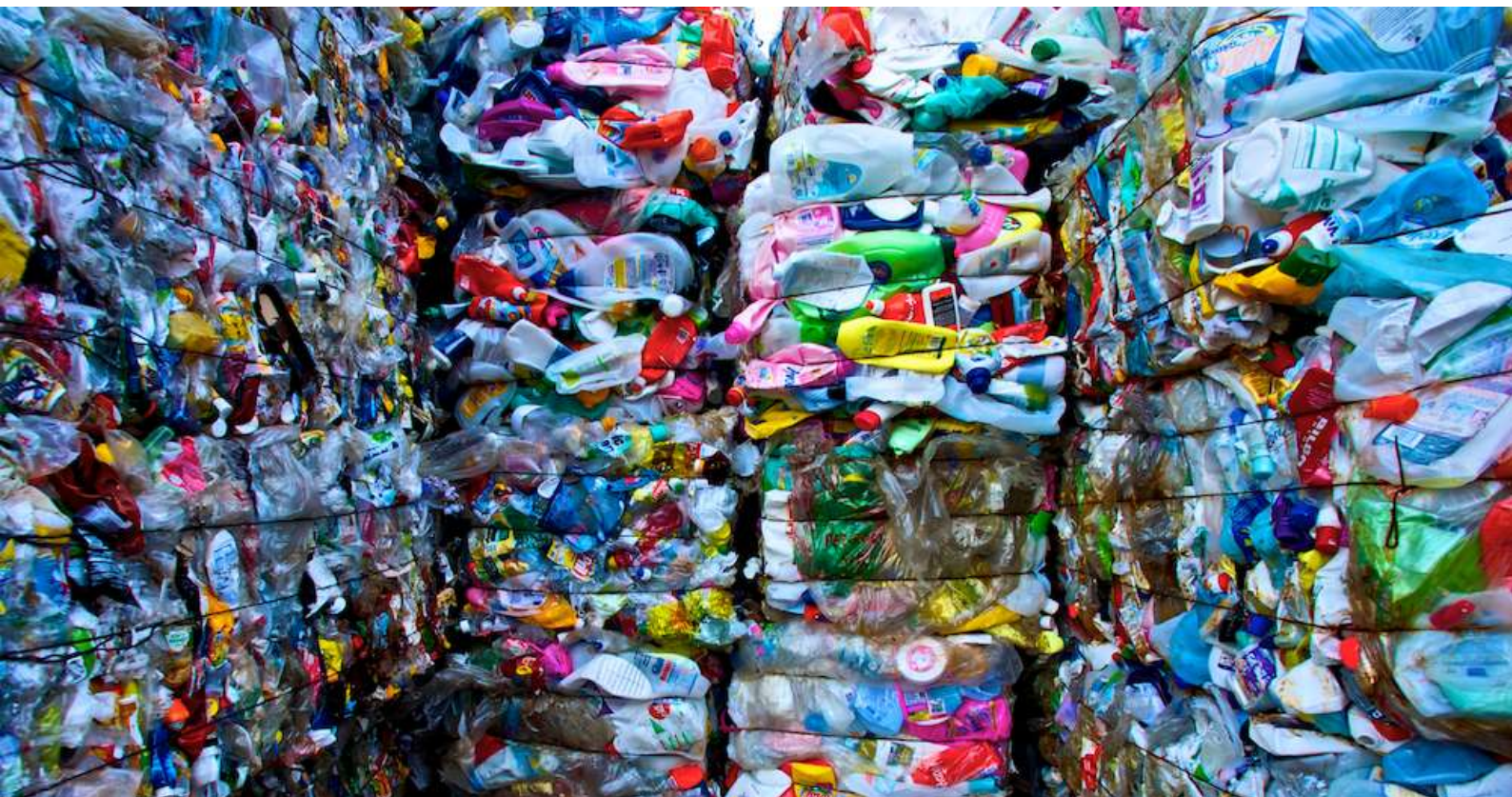


India – Australia Industry and Research  
Collaboration for Reducing Plastic Waste

# A summary of Year 1 research activities

November, 2021



# India – Australia Industry and Research Collaboration for Reducing Plastic Waste

The India – Australia Industry and Research Collaboration for Reducing Plastic Waste is a three-year collaboration with partners in both India – the Council of Scientific and Industrial Research (CSIR), Development Alternatives and The Energy and Resources Institute (TERI) – and Australia – the University of New South Wales (UNSW), the University of Technology Sydney (UTS) and CSIRO. Through key activities, this collaboration works closely with industry, government and community stakeholders to evaluate the economic and policy implications of transitioning to a circular economy for plastics.



Project co-ordinating organisation



# Breaking down India's plastic waste

India's plastic waste is a growing problem. In 2019 the nation produced 14.2 million tonnes of plastic. Unfortunately, it also generated 9.73 million tonnes of plastic waste, about half of it immediately and half from previous years' plastic falling out of use. A decade ago, the average annual plastic waste per person was about 8kg; but that is growing at just less than 1kg a year and by 2035 it will be 29kg per person. That will amount to over 20 million tonnes of waste – an unsustainable amount in any language.

To help come to grips with this challenge, the Indian and Australian Prime Ministers launched the India-Australia Plastics Research Initiative in June 2020. The aim is not only to reduce waste, but for the two countries to work on driving a circular economy for plastics in India. Today, we are finding out what our first year of work has achieved, so that we can commence the second year with good and achievable intent.

**Today we can say that solving the 20 million tonne waste problem is a \$500 billion circular economy opportunity for India. The next step in seizing that opportunity is to engage people in it.**

- **Breakthroughs towards circular plastic in India will depend on business models and policies that offer incentives and support in upstream production and design activities.** Although plastic waste is a \$500 billion opportunity, it will depend on business models that can draw in recycled feedstocks, extend or intensify plastic use, and then re-capture the used plastic at its end of life. They in turn will depend on national and sub-national policies that provide incentives and support at the upstream production and design stages – the stages that determine whether the plastics value chain can be turned into a cycle. With policies and business models in place, initiatives to promote behaviour change are more likely to succeed.
  - **However, to date, circular economy initiatives have tended to be narrowly focussed on recycling and engagement.** Our first year's work identified the extent of the plastic waste problem not only in terms of its tonnage, but in terms of the gaps that need to be addressed to secure the opportunity. We looked at the industry, community and public sector initiatives designed to promote a circular economy. There was much to appreciate in the number and scope of initiatives designed to raise awareness of the benefits of recycling and how to participate in it. However, we also found sizeable gaps in their target audience and objectives.
    - *A narrow focus on recycling.* In India, plastic production and importing tends to be done by larger companies, processing the plastic by medium-sized companies, and recycling by smaller companies. The future of the circular economy will depend on engagement with the larger companies at the head of the plastics value chain. These are the ones that will drive the product substitution and extended or intensified use that will unlock the circular economy.
- However, initiatives to date to address India's waste challenge have focused on smaller companies at the recycling end of the value chain. They have focussed on end-of-use recycling, with some actions directed at reducing single use plastic but few at plastic

feedstocks, re-use, repair or repurposing. India's national and sub-national policies followed the same pattern: focussing on the end of the plastics value chain – recycling – rather than the upstream production and design aspects that could turn that chain into a cycle. In so doing, however, the initiatives seem to have overlooked some of the largest groups in Indian society – rural India, women and youth – all of whom will drive community responses to policy and business initiatives.

- *A narrow focus on engagement.* The initiatives to date have also focussed mainly on awareness of the problem, with only minor incentives offered for recycling. There has been little work to date on the business models that will drive circular plastic in India – what they are, how they work, and how they can be promoted. Similarly, we examined national and sub-national policies that may affect plastic's circular economy, and explored their efficiency, effectiveness, (equity??), potential, flexibility and cross-sectoral influence. Again, the focus was on engagement and awareness, rather than the incentives and regulations that would either entice or enforce action.

The same theme sounded in our review of social and behavioural enablers for circular plastics. We looked for initiatives that would either promote awareness or real change in plastic reduction, re-use, recycling or responsible disposal. We found again that the emphasis was on raising awareness of the skills needed for circular plastic, rather than pushing for the materials, the infrastructure and indeed the symbolic meanings needed to shift behaviours.

- *A narrow focus on “doing”.* Finally, we found that the initiatives to promote awareness about plastic recycling have focused on the *doing* at the expense of the *thinking*. This may be taken by some as a welcome compliment. However, in carrying out initiatives we found little emphasis on determining their outcomes and impacts, or comparing them with their intended purpose, or indeed being clear on that purpose. That suggests the need remains to better understand what actions are effective in India, given its particular social and economic environment.

- **Therefore, our 2<sup>nd</sup> phase will engage people in India to become involved in the key case studies that (in the 3<sup>rd</sup> phase) will demonstrate how to close those gaps.**

Many of these gaps are recognised by the public and private participants in India's plastics sector. For example, there is growing agreement among stakeholders that the draft Plastic Waste Management (Amendment) Rules, 2021 will significantly shape future demand and stricter enforcement of extended producer responsibility. As well, there are tentative steps to enable circular economy business models, through the availability of green markets and supply chains, collaborative networks, and aligned organizational cultures.

Now is the time to engage with these green shoots and bring them into this research effort. Over the next year, the 2<sup>nd</sup> phase of the India-Australia Plastics Research Initiative will:

- design a field study to inform future policy design for the wider adoption of circular economy strategies, and engage participants in the study
- explore nine business case studies (spanning the four circular economy strategies of substituting, extending, intensifying and cycling) with extensive stakeholder consultation and data collection

- investigate ways to enable behaviour change through influencing social meanings and attitudes, and addressing materials and infrastructure aspects, as well as improving skills and awareness, and
- improve the tailoring and targeting of initiatives to maximise impact, to understand issues that impede or enhance program implementation, and to identify potential data for program evaluation.

These insights and actions will contribute much to India's national roadmap for a circular economy for plastics.

We greatly appreciate your support, and look forward to the 2<sup>nd</sup> year of our project.



**As Australia's national science agency and innovation catalyst, CSIRO is solving the greatest challenges through innovative science and technology.**

CSIRO. Unlocking a better future for everyone.

**Contact us**

1300 363 400  
+61 3 9545 2176  
[csiroenquiries@csiro.au](mailto:csiroenquiries@csiro.au)  
[www.csiro.au](http://www.csiro.au)

**For further information**

**Land and Water**  
Natasha Porter  
+61 8 9333 6251  
[Natasha.Porter@csiro.au](mailto:Natasha.Porter@csiro.au)