



# Waste marketplace

## DETAILS

**SECTOR** | Cross-sectoral

**STAGE** | Renewal and disposal

**TECHNOLOGIES** | Platforms and interfaces

## SUMMARY

Waste is treated very differently around the world. At one extreme, some countries such as Turkey send more than 85% of their municipal waste to landfill, while others such as Germany recycle, compost, or incinerate 100% of their municipal waste<sup>1</sup>. Globally, a significant volume of waste is currently being incinerated or disposed of in landfill, when it could instead be reused or recycled. A “waste marketplace” provides digital infrastructure to enable higher rates of reuse and recycling.

Global material consumption is increasing<sup>2</sup>, with growing population and affluence leading to more waste generation and resource extraction<sup>3</sup>. In recent years, many countries and organisations have set goals to reduce the amount of waste that goes to landfill. Of these, perhaps the most recognisable is Goal 12 of the Sustainable Development Goals (SDGs) created by the United Nations: “Responsible consumption and production.” Of particular interest is Target 5 in Goal 12: “By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse”<sup>2,4</sup>.

A significant component of waste is from the commercial and industrial sectors. This commercial and industrial waste can comprise of many different materials including metals, food, garden organics, cardboard, paper, plastic, glass, and masonry<sup>4</sup>. These by-products are considered waste by the companies producing them, however, there are often other companies (potentially in a different industry) that would consider that very same by-product to be a resource. Unfortunately, it is very unlikely for the company producing the waste to have any interaction with the company that would consider the waste to be a resource.

If one company’s waste is another’s resource, both companies may benefit economically by transferring this material from the former to the latter. In some instances, the former may be paying to dispose of their waste

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<sup>1</sup> OECD (2019), “Circular economy - waste and materials”, in Environment at a Glance Indicators, OECD Publishing, Paris, <https://doi.org/10.1787/f5670a8d-en>.

<sup>2</sup> United Nations Economic and Social Council (2019), “Special edition: progress towards the Sustainable Development Goals”

<sup>3</sup> CSIRO & UNEP (2013), “Recent trends in material flows and resource productivity in Asia and the Pacific”

<sup>4</sup> King S, Ayre M, Simpson G, Lusher D, Hopkins J (2016) Sustainable Regional Development Through Networks – the case of ASPIRE (Advisory System for Processing, Innovation and Resource Efficiency) to support industrial symbiosis for SMEs, CSIRO, Australia.

and would be able to instead sell the waste. The latter company who considers the waste to be a resource may be able to purchase this material at a lower cost.

How do these companies find each other and recognise the potential economic benefits? A waste marketplace enables companies to provide information about their by-products and required resources and find other companies that consider their by-product as a resource or vice versa.

Such a marketplace requires significant coordination and networking. Previous attempts at building such marketplaces have sometimes failed for a number of reasons including a lack of industry awareness, information privacy and confidentiality concerns, and the passive nature of a marketplace<sup>4,5</sup>. However, there are some examples of successful waste marketplaces, which often make good use of a variety of techniques, including keeping marketplace content current, providing updates to users, and working with peak industry bodies<sup>5</sup>.

## VALUE CREATED

### Improving efficiency and reducing costs:

- Potential reduction in cost of disposing waste. In some cases, the waste could be sold at a profit.
- Potential reduction in cost of acquiring materials, since it may be cheaper to purchase the material from a company that was producing it as a by-product. In some cases, a company may be paid to remove the by-product.

### Enhancing economic, social and environmental value:

- Reduced resource consumption, since more materials are reused and recycled.
- Reduce landfill by diverting more waste to reuse and recycling
- Improved corporate reputation due to greater levels of sustainability.

### Reshaping infrastructure demand and creating new markets:

- Most places in the world do not have access to such a marketplace. This creates an opportunity for many companies to use a new market to improve each other economically.
- Creating new circular economy relationships and resource supply chains between different industries.

## POLICY TOOLS AND LEVERS

**Legislation and regulation:** Governments can improve the demand for a waste marketplace through regulations on waste and taxes on landfill. To help improve the effectiveness of a waste marketplace, particularly across multiple regions or states, governments should have consistent categorisations of waste streams and show solidarity in waste regulations<sup>4</sup>.

**Procurement and contract management:** Governments could include the use of a waste marketplace as a requirement of infrastructure proposals in planning and design phases. The presence of a waste marketplace also offers additional procurement options for government and industry.

**Transition of workforce capabilities:** Many organisations, particularly small and medium enterprises (SMEs), will not have someone looking for alternative sources of materials. There will be many instances where a company could make use of someone else's by-product, but with some modification to existing processes, requiring a greater level of workforce capability in procurement. For example, a road maintenance company could switch

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<sup>5</sup> Corder, G.D. et al. (2014), "The status of industrial ecology in Australia: Barriers and enablers" in *Resources*, 3(2), pp. 340-361.

from using asphalt to using asphalt which incorporates recycled<sup>6</sup> materials, but they may need to use slightly different equipment, and this would require a higher level of technical competency than regular procurement.

## IMPLEMENTATION

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### Ease of Implementation



The setup of a waste marketplace requires significant coordination and a network of actively participating companies. Many previous attempts (as discussed above) have failed without proper support and networking.

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### Cost



This is a relatively inexpensive infrastructure cost and provides economic benefits to the companies involved, and the government through reduced landfill demand.

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### Country Readiness



Many countries are ready for this. Developed countries may have an easier time implementing this due to stronger regulations on waste that drive companies towards reducing waste to landfill.

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### Technological Maturity



The technology required is rather simple and mature. The main hurdles appear to be coordination, regulation, and networking issues.

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## RISKS AND MITIGATIONS

### Implementation risk

**Risk:** There is a risk that a waste marketplace will not “stick”. As previously mentioned, previous attempts at building such marketplaces have sometimes failed for a number of reasons including a lack of industry awareness, information privacy and confidentiality concerns, and the passive nature of a marketplace<sup>4,5</sup>.

**Mitigation:** The waste marketplaces that have been most successful have utilised a variety of techniques, including keeping marketplace content current, providing updates to users, and working with peak industry bodies and government authorities.

**Risk:** Previous attempts have failed when companies are not engaged in the marketplace.

**Mitigation:** The successful attempts have included strong social connections, including via peak industry bodies and local government.

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<sup>6</sup> Downer Group. [Reconophalt approved by NSW Environment Protection Authority](#). Accessed 2 June 2020.

### Safety and (cyber)security risk

Risk: Some information may be considered confidential. For example, if companies are required to list the quantities of by-products, some other companies may find that information to be useful for estimating production outputs. This data may be required by the marketplace to help match companies together.

Mitigation: Modern cybersecurity provides many solutions to this problem that can prevent this information from being accessed by the wrong users of the marketplace.

### EXAMPLES

Example	Implementation	Cost	Timeframe
ASPIRE (Advisory System for Processing Innovation and Resource Efficiency), Melbourne, Australia	ASPIRE is (1) a digital online tool that helps make matches between compatible companies and (2) supported by regional facilitators. Combining the digital and social networking components allows local SMEs to match with compatible companies and establish a useful connection.	From 6 example matches, it was estimated that waste cost was reduced by \$60,000 per year, and resource input costs were reduced \$13,500 per year	To build ASPIRE from scratch took less than 2 years, and had more than 100 companies registered within 6 months of going live.