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# Coordinating Supply Chains

## Challenges

- Conventional supply chains are highly “linear” – resources become components, then products, and at the end of the product-life, waste. Linear supply chains waste resources by overlooking opportunities to make use of materials arising as by-products of manufacturing processes, and of the materials contained in the products themselves at the end of their lives.

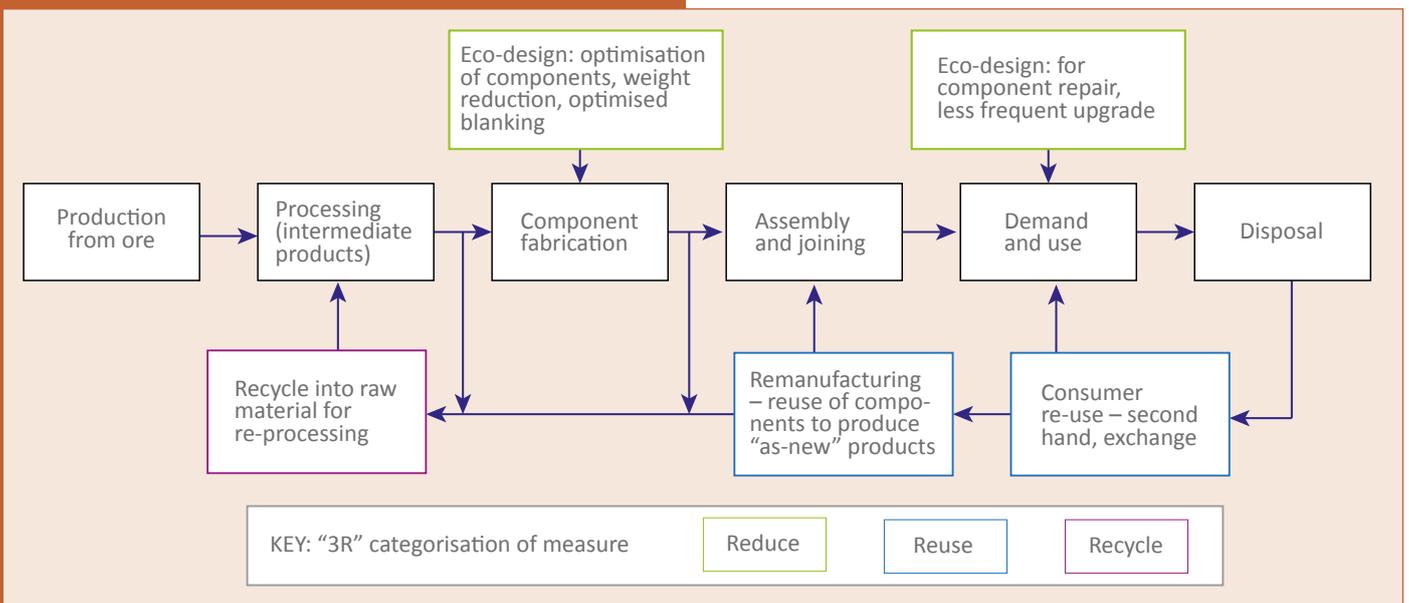


- More “circular” supply chains, by contrast, seek to increase resource efficiency by reducing, reusing and recycling, throughout the supply chain.
- However, if supply chains have historically been established on the basis of a largely linear and uni-directional flow of resources, there may be institutional, regulatory and cultural barriers that work against efforts to have materials flow in the opposite direction, and to move towards a more “circular” economy.

## Responses

- Reducing the linearity of resource flows through loops (the 3Rs – reduce, reuse and recycle) that take material rejected from the supply chain and feed it back as a resource into an earlier stage of the supply chain.
- As well as providing appropriate price signals and regulations, governments may also have an important role in bringing together and helping to coordinate the activities and resource flows of private actors. Co-ordination can assist private actors in identifying mutually beneficial circular flows of resources, that when implemented save resources and money.

Schematic representation of a more ‘circular’ resource efficient product supply chain, showing benefits of ‘3Rs’



- Government-led programmes, such as industrial “ecotowns” and “industrial symbiosis” programmes, foster a multi-actor coordination approach to the planning of resource management, and to the logistics of material and product supply and return. They have identified previously untapped opportunities for more circular resource flows, and created new relationships that have led to further private sector innovation.

## Examples

### Eco-Town programme in Japan

#### What?

- Industrial Symbiosis programme developing 26 Eco-Towns across the country.
- Aim to reduce waste going to landfill, and regenerate local industries.

#### Success factors

- Identification of suitable industrial locations, and coordination of relevant private actors.

#### Results

- 61 recycling facilities established across the 26 Eco-Towns.
- Nearly 2 million tonnes of waste recycled per year, in various industrial processes.
- Stimulated private sector activity – for every government subsidised plant, 1.5 built by private sector without subsidy, due to connections made by the programme.
- Carbon emissions also saved – for example reduced by 14% in Kawasaki Eco-Town.

### Eco-Industrial Park programme in Korea

#### What?

- Industrial symbiosis projects involving different industries enabled them to make economic use of by-products, energy, materials and water between 2005 and 2010 that would otherwise have been wasted.

#### Success factors

- Projects to generate revenue from by-products were especially successful as they involve no large upfront investments.

#### Results

- Reduced material waste: 477,633 tonnes.
- Cost reductions: USD 97 million.
- Revenue generation: USD 92 million.

### UK National Industrial Symbiosis Programme (NISP)

#### What?

- Government-led programme to identify opportunities for private sector actors to coordinate resource flows and achieve industrial symbiosis.

#### Success factors

- Programme provided dedicated expertise, not only to broker links between companies but also to assist with advice on technical requirements.

#### Results

- Increased business sales by £176 million, reduced business costs by £156 million, leveraged £131 million in private investment, and saved or created a total of 8,700 jobs. This extra economic activity meant that the government received in taxes more than three times its original £28 million investment.
- 12.6 million tonnes of waste diverted from landfill by enabling them to be re-used or recycled.
- Delivered significant savings in CO<sub>2</sub>, virgin materials, water and hazardous waste.

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The International Resource Panel was established in 2007 to provide independent, scientific assessment on the sustainable use of natural resources and the impacts of resource use over the full life cycle.