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REACT



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Circular Resource Management



CASE STUDY 2 - RECONFIGURING VALUE FOR CIRCULAR ELECTRONICS

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ABSTRACT

Value can remain embedded in products, components and materials long after the economy has classified them as waste. The label therefore signals the end of one use, not necessarily the end of value. This case explores an emerging opportunity for Circulus: starting with unmet demand for scarce resources, identifying where equivalent value may already be sitting in decommissioned or overlooked assets, and building the network needed to recover and reinsert that value before it is diluted, destroyed or exported into low-value routes.

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Rediscovering latent value in decommissioned assets: An emerging demand-led business model for strategic resource recovery

- **Industry challenge:** valuable resources become invisible when assets are classified and processed as waste.
- **Value opportunity:** identify latent stocks of embodied value and connect them with unmet demand.
- **Business model response:** orchestrate discovery, assessment, aggregation, recovery, and reinsertion.
- **Responsible innovation question:** which scarce resources should be prioritised, who benefits, and what capabilities should be retained locally?
- **Transferable lesson:** circularity can become a strategic resource-matching capability, not only a waste-management activity.

Value can remain embedded in products, components and materials long after the economy has classified them as waste. The label therefore signals the end of one use, not necessarily the end of value. This case explores an emerging opportunity for Circulus: starting with unmet demand for scarce resources, identifying where equivalent value may already be sitting in decommissioned or overlooked assets, and building the network needed to recover and reinsert that value before it is diluted, destroyed or exported into low-value routes. The central concept is **value rediscovery**: *making latent value visible again by reconnecting dispersed supply with strategic demand*.

THE EMERGING OPPORTUNITY: VALUE MAY ALREADY BE SITTING IN THE ECONOMY

The transition to renewable energy, electrification and other low-carbon technologies is increasing demand for components, metals, and critical raw materials. At the same time, mature industries are retiring substantial volumes of equipment. These two movements are usually treated separately: one as a supply problem for growing sectors, the other as a decommissioning or waste-management problem. The emerging opportunity is to connect them.

The Circulus has realised that industrial electronics currently in service or entering decommissioning across oil and gas, renewables and marine activity are potentially important sources of valuable material. The realisation also highlighted a weakness in conventional decommissioning routes: large-volume metals tend to dominate recovery decisions, while smaller electronic assemblies and valuable fractions may be shredded, mixed into residue, or moved downstream before their potential has been assessed. Once that happens, value may be physically present but economically invisible.

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This distinction matters because the classification of an asset as waste does not mean that all of its value has been exhausted. A decommissioned control panel, composite cable, electronic module, or other industrial component may no longer be useful to its original owner while still retaining functional, material, informational, or strategic value elsewhere. The problem is therefore partly one of visibility: the economy may possess resources that a future value chain needs, but no mechanism exists to recognise, assess, and redirect them before conventional disposal pathways take over.

REVERSE THE LOGIC: START WITH DEMAND, NOT WASTE

The proposed business model differs from conventional recycling because it begins on the demand side. A *waste-led model* asks what can be recovered from the material that arrives. A *demand-led model* asks a more strategic question: what resources, components or already manufactured products are needed for a new purpose, and where might that value already exist in the economy?

This changes the unit of analysis. The relevant demand is not limited to tonnes of copper, aluminium, or other commodities. It may include assembled components, specialist electronics, cables, control equipment, or material fractions that have already absorbed energy, labour, manufacturing capability, and knowledge. Where technically and commercially feasible, retaining these higher-order forms can avoid destroying value only to recreate it elsewhere.

Prioritisation should also extend beyond the resource with the highest immediate resale price. Current recovery markets naturally favour fractions that are easiest to sell and process. Yet the highest-priced material is not always the most strategically important. Scarcity, import dependency, substitutability, supply-chain vulnerability, expected future demand, and the difficulty of creating new supply can all matter. The opportunity is therefore to combine commercial intelligence with resource intelligence.

The demand-first logic can be summarised in three moves:

1. **Identify strategic demand.** Define the components and materials that users actually need, the specifications they must meet, and where scarcity or supply risk is greatest.
2. **Locate latent supply.** Map decommissioning, surplus, and waste streams across sectors to identify where those resources may already be embodied in existing assets.
3. **Build the pathway back to use.** Create the commercial, technical, and logistical network needed to intercept, assess, preserve, transform, and reinsert those resources into a viable market.

Case study 2 - Reconfiguring value for circular electronics*REACT – Circularity use case library***FROM WASTE HANDLER TO STRATEGIC RESOURCE INTERMEDIARY**

A demand-led model changes the role of organisations such as Circulus. Their potential value is not limited to being a final destination for waste or a processor that extracts a few saleable fractions. They can become strategic resource intermediaries: organisations that consolidate capabilities, processes, data, and relationships that are otherwise scattered across the economy.

No single intermediary needs to own every recovery technology. The distinctive capability is orchestration. It can identify promising material streams before decommissioning decisions are locked in, separate assets according to their highest viable next use, aggregate sufficient volumes, provide traceability, and route different outputs to specialist partners. Some items may be reusable in their existing form. Others may require testing, recertification, dismantling, or targeted processing. Only where these higher-value routes are not viable should the asset move directly to bulk material recovery or disposal.

Circulus already demonstrates several building blocks relevant to this role: collection and segregation, manual disassembly, routing of printed circuit boards and other fractions to downstream processors, relationships with specialist recovery organisations, and a stated ambition to move further up the value chain into critical-material recovery. The emerging opportunity is to combine these capabilities with upstream market intelligence so that recovery activity is guided by what the economy needs, rather than only by what enters the waste stream.

Aggregation is particularly important. Valuable assets may be dispersed across many organisations, sites and sectors. Individually, each stream can be too small or inconsistent to justify specialist recovery infrastructure; collectively, they may form a viable feedstock. The intermediary creates value by making this fragmented supply visible, comparable and addressable, while also giving buyers confidence about provenance, condition, composition and quality.

BUILDING A SUSTAINABLE VALUE NETWORK

For the model to become more than an environmental intervention, the network must also be economically sustainable. Profit is not separate from the circular objective; it is one of the conditions that allows the system to persist, invest and scale. However, commercial viability does not require every decision to maximise the short-term price of the recovered fraction.

Revenue could come from a portfolio of activities: decommissioning and resource-assessment services, aggregation and logistics, testing and recertification, sale of reusable components, sale of prepared material fractions, traceability and reporting, and fees for connecting supply to demand. Higher-value streams can support the infrastructure and capabilities needed to recover strategically important resources that may currently have weaker market economics. This also creates a clearer role for partnerships, as described in Figure 1.

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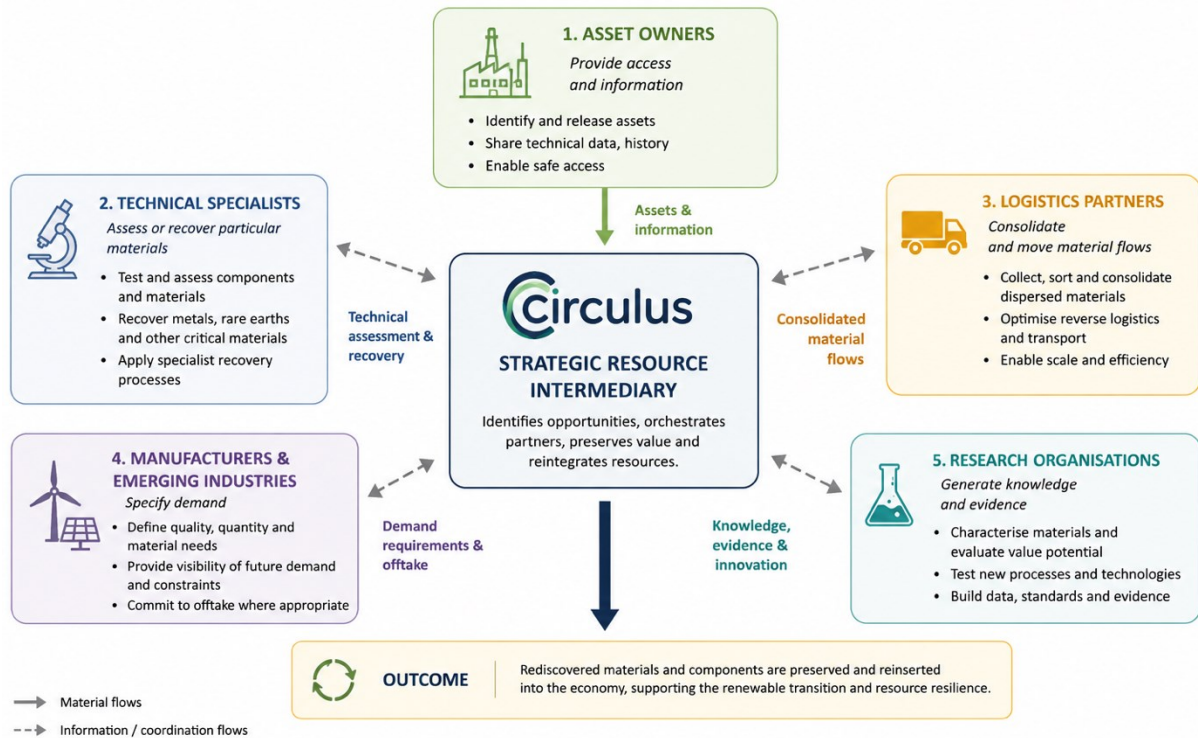


Figure 1 Partnership ecosystem for rediscovering and reinserting value

The business model is therefore a network model: value is rediscovered because multiple actors coordinate around a shared resource opportunity.

From circular practice to strategic policy capability

The wider implication is that resource recovery could become an industrial capability rather than only a waste-management function. For Circulus, the opportunity can be explicitly linked to the decommissioning imperative in Scotland and to the challenge of building a supply chain capable of accessing critical materials.

The discussion also recognised that the economically viable scale may extend beyond Scotland, with consolidation and early-stage processing performed locally while some downstream recovery may need UK or international infrastructure.

For policymakers, this points to a form of resource matchmaking. On one side is a forward-looking map of demand: which components and materials are required, where supply is constrained, and which shortages matter most to the transition. On the other is a map of latent supply: decommissioned infrastructure, industrial electronics, surplus equipment, and other material pools that are currently poorly visible. Between the two sits a network of organisations able to identify, assess, preserve, aggregate, process, certify, and move those resources.

Such a capability could broaden the way circular-economy performance is understood. The question would no longer be only how much waste is diverted from landfill, but how much useful value is retained and redirected towards areas where demand is difficult to satisfy. It could also inform decisions about where intervention is justified: for example, where strategically scarce resources are not yet sufficiently valuable at market prices to support careful recovery, but are important for resilience, net zero, or industrial policy.

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What remains to be tested

This remains an emerging opportunity rather than a proven operating model. Several conditions need to be tested.

- **First**, demand must be specific enough to guide recovery: material names alone are insufficient without information on form, quality, specification, volume, and timing.
- **Second**, latent supply must be mapped early enough to influence decommissioning decisions, because value can disappear quickly once assets enter bulk shredding or export routes.
- **Third**, the economics of collection, assessment, separation, transport, and specialist processing must be assessed at network level.
- **Finally**, governance matters: ownership, waste classification, safety, certification, liability, and cross-border movement can all determine whether a technically viable route is practically usable.

Responsible innovation adds a further question: which resources should the system prioritise, who should carry the cost of preserving them, and where should capability be located? A scarcity-led model may sometimes favour resources whose strategic importance is greater than their immediate market price. That makes public priorities, transparency and collaboration relevant to the design of the business model, not merely to its regulation after the fact.

What this case changes

This case shifts circularity from a waste-management problem to a value-discovery problem. Value loss can begin before a material is physically destroyed: it begins when an asset is classified as waste, disconnected from possible future uses, and routed through a process that does not look for its highest-value next purpose.

The concept of value rediscovery captures this gap. It describes the deliberate process of making latent value visible again by linking strategic demand with dispersed pools of embodied value. In this model, the circular intermediary is not simply a recycler. It becomes a market-making and coordination capability that helps the economy recognise resources it already possesses.

The transferable lesson for the REACT mandate is that circular business models can reconfigure value in different ways. Here, the distinctive mechanism is not primarily the preservation of a known asset, but the rediscovery of value that has become hidden by sector boundaries, ownership changes, and the category of “waste”.

Case study 2 - Reconfiguring value for circular electronics*REACT – Circularity use case library***CONCLUSION: REDISCOVERING VALUE BEFORE IT DISAPPEARS FROM VIEW**

Some of the resources required for the next economy may already be embedded in the current one. They may sit in equipment reaching the end of its original purpose, across decommissioning programmes, or inside material streams treated as waste because no route exists to connect them with another use. A demand-led circular business model offers a way to expose that hidden opportunity.

The model starts with strategic need, locates corresponding stocks of embodied value, and builds the network required to assess and reinsert them. For industry, this creates a potential commercial model around resources that are currently overlooked. For organisations such as Circulus, it suggests a move from waste processor to strategic resource intermediary. For policymakers, it offers a practical mechanism for linking circularity, supply resilience and industrial transition.

The opportunity is not simply to recover more waste. It is to rediscover value before the economy stops seeing it.