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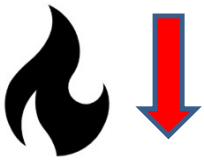
In-Person Meeting – Tuesday 15th October 2024



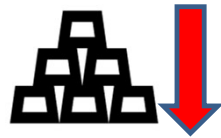
The potential of Value Retention Processes (VRPs)

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If you saw something that...



Carbon



Commodity +
Critical Materials



Jobs



Skills



Re-shoring

Would you be interested

**Value
Retention
Processes**

Tuesday 15th October 2024

Value Retention Processes

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Activities which keep products in use for longer – remaining life, or whole new life.
Product re-use is waste prevention.

Remanufacturing	Comprehensive refurbishment	Refurbishment	Repair	Re-use
<< Adds whole new life			Maximises first life >>	
<< Fixes whole		Fixes a problem		Works fine >>
<< Industrial process			No industrial process >>	
<< Higher		Skills	Lower >>	
<< Higher		Avoided CO _{2e} per extra life		Lower >>

We investigated 10 sectors

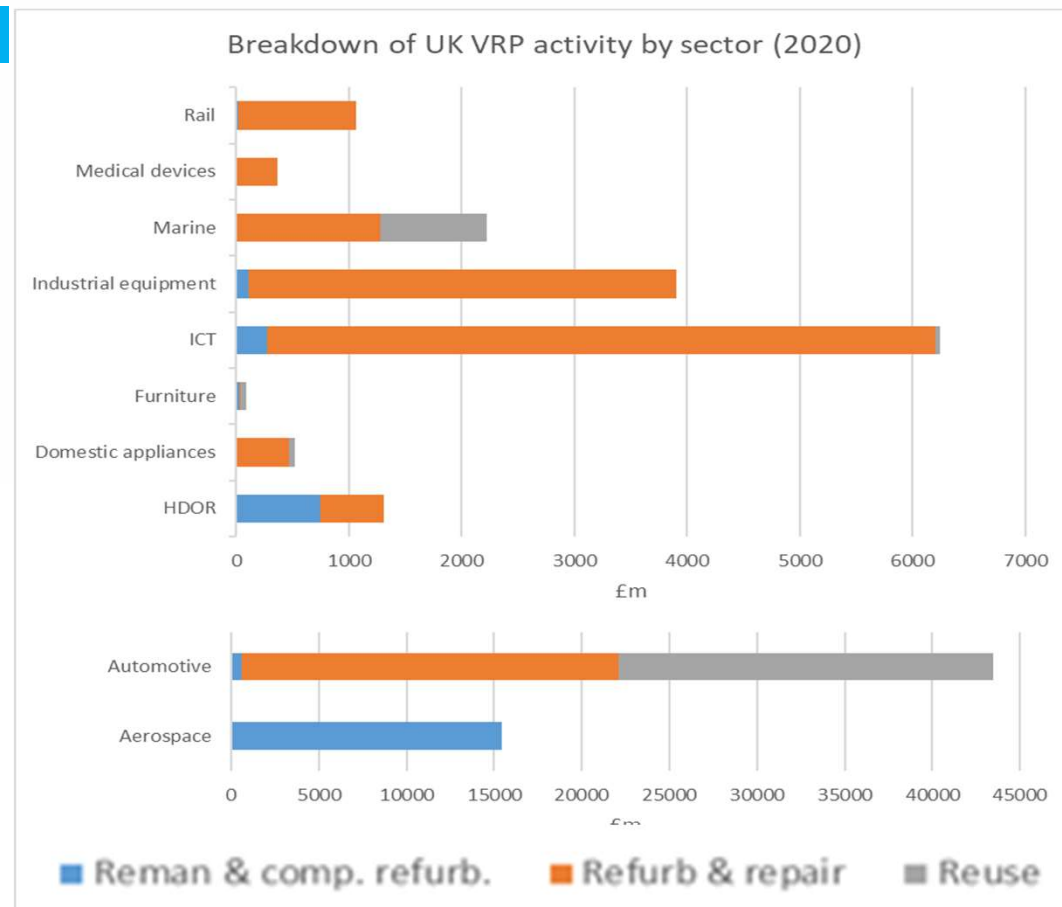
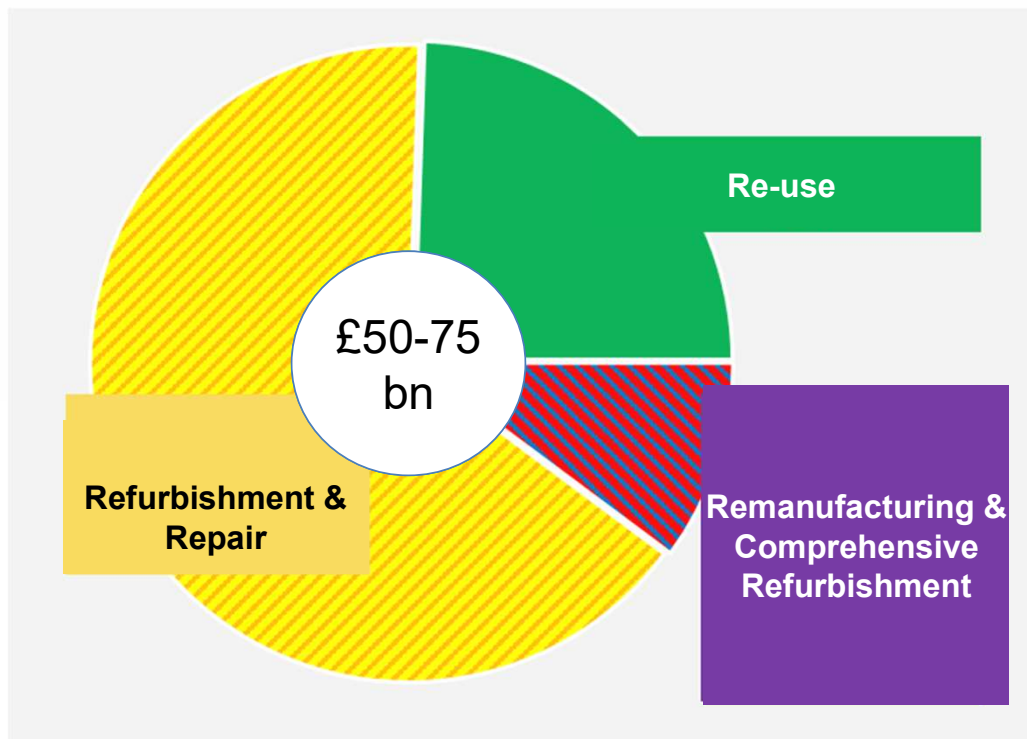
- Importance
- State of the art
- Business and consumer
- Potential
- Alignment to other studies

- Aerospace
- Automotive
- Heavy-duty and off-road
- Electronics
- Home Appliances
- Furniture
- Marine
- Medical devices
- Industrial equipment
- Rail

Size of UK market (2020)

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GDP per tonne or per person outstrips recycling by multiple factors of 10



Impacts in context

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Employment

Across 6 sectors, over 500 000 jobs in VRPs

- Higher employment per £ revenue than manufacturing
- 1.5 -2 ratio (see annex slide)
- Higher skilled jobs

Carbon avoided

Across 10 sectors, 4-6 Mt carbon avoided p.a.

- 2 x impact of steel recycling kg per kg

Materials wastage prevented

More than 600 kt material p.a.

- Potent materials saving tactic esp. CRMs

Transformation potential

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We asked stakeholders for their views on the potential of remanufacturing

Currently

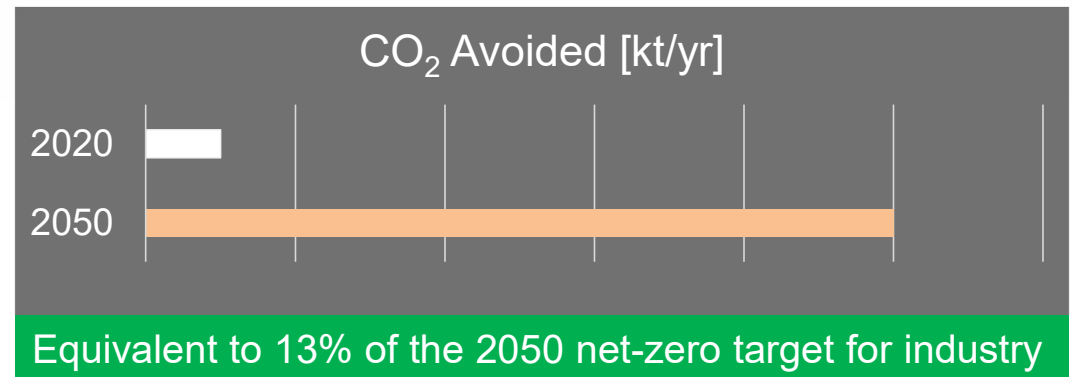
Reman is around 2% of manufacturing

Stakeholders said

Remanufacturing could be at least 20%

Reality check

Aerospace is at least 20% now



Barriers

Across all studies, the most common **barriers** faced in growing VRP activities include:

- **Regulatory and trade** barriers, particularly related to **definitions of waste**.
- **Cost pressures** relating to **reverse logistics** and **competition**.
- **Technological barriers** relating to the **value retention processes** themselves.

Summary

- Re-use activities are largely behind the scenes, large but could be hugely increased
- They are central to the Circular Economy
- They increase high-skill employment whilst lowering carbon emissions and materials consumption
- They have £/person and £/t benefits vastly outstripping recycling
- An aggressive expansion could yield carbon emissions benefits equivalent to 13% of the 2050 manufacturing Net Zero reduction target

Prime resources

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Re-defining Value – The Manufacturing Revolution: Remanufacturing, Refurbishment, Repair and Direct Reuse in the Circular Economy (2018)

For: UNEP-IRP

Link: [Reports web page](#)



Final Synthesis Report of the Socio-Economic and Environmental Study of the Canadian Remanufacturing Sector and Other Value-Retention Processes in the Context of a Circular Economy (2021)

For: Environment & Climate Change Canada

Link: [Report Summary web page](#)

Full report also at web site

Presentation available from Oakdene Hollins



A study of the Potential of VRPs for Resource Efficiency (2022)

For: Innovate UK

Contact: David Elson @Innovate UK

Full report also available from Oakdene Hollins

Also of interest:

Study for Scottish Government (via ZWS) of National CE Metrics Framework

Report for Welsh Government on VRP skills gaps

 INSTITUTE OF CORROSION

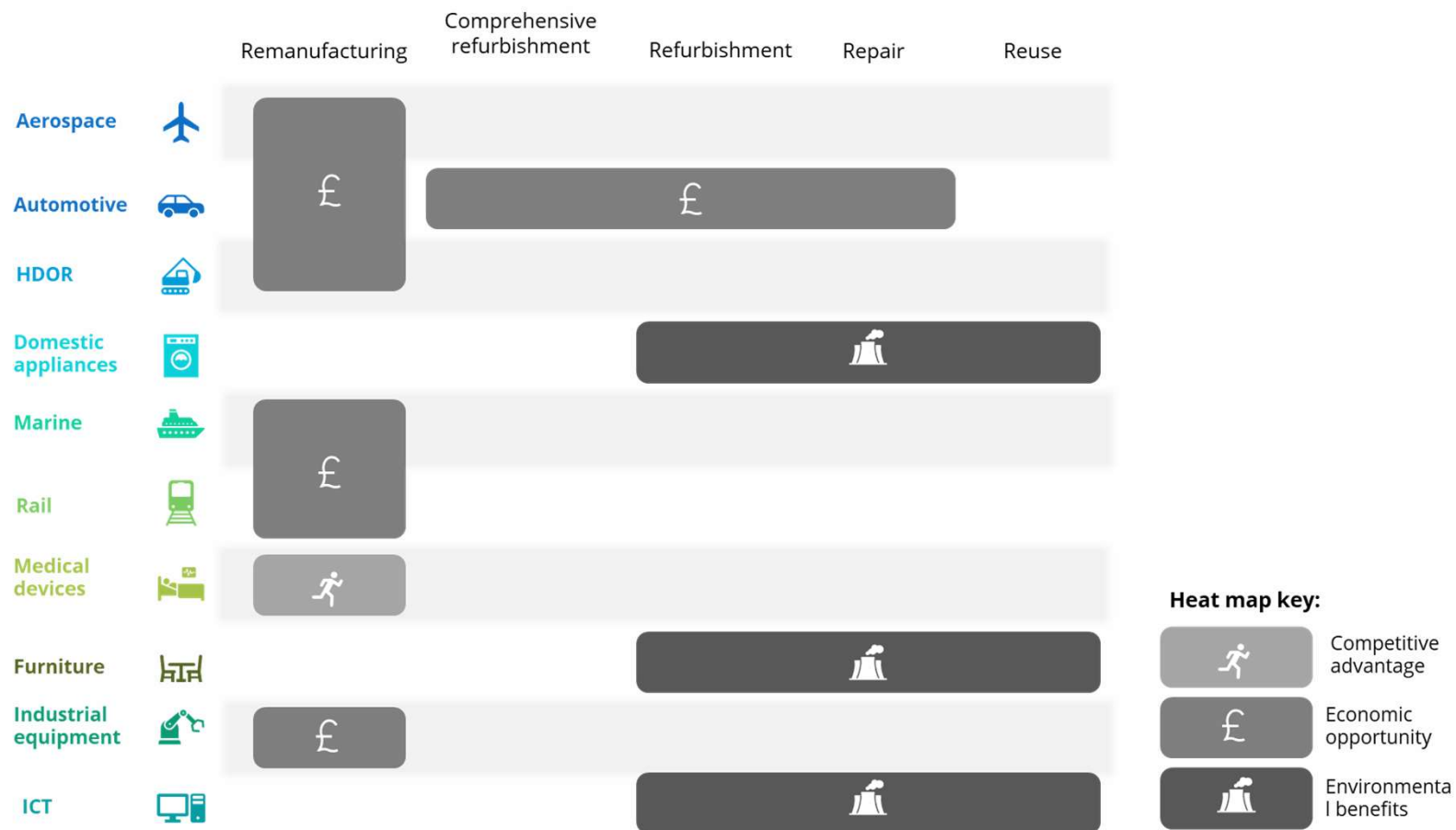
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- There are distinct barrier clusters
- Distinction also by B2B/B2C

Barriers	Aerospace	Automotive	HDOR	Electronics	Home Appliances	Furniture
Foreign legislation	Yes					
Customer recognition	Yes	Yes				Yes
Product knowledge	Yes	Yes	Yes	Yes	Yes	
Skilled personnel availability	Yes	Yes	Yes	Yes	Yes	Yes
Labour costs	Yes	Yes	Yes	Yes	Yes	Yes
Scale economies		Yes				
Feedstock quality/volume		Yes	Yes	Yes	Yes	Yes
Lack of sales channels		Yes	Yes			Yes
Product design		Yes		Yes	Yes	
Foreign import restrictions				Yes	Yes	Yes
Capital requirements						

Sector tactical priorities and motives

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Strategic approach

- We identified 16 actions arranged into 5 clusters
- 10 actions are high priority

1. Overall strategy, coordinate approaches
2. Sector focus groups
3. Terminology & standards
4. Rebalance EoL and purchasing tariffs
5. Update NAO metrics/reporting
6. Embed right to repair
7. Use public purchasing
8. Support community reuse and repair
9. Public messaging and trust building
10. International VRP recognition protocols



VRPs are a source of international competitive advantage for the UK

STRENGTHS	<i>UK resources or capabilities that enable the UK-wide adoption of VRPs:</i> Strong engagement in standards development. • Strong research activity – key universities. • Well-established VRP industries in aero, auto, industrial equipment. • Strong circular economy focus (NICER programme, Defra working group on circular economy for Net-Zero). • Advanced manufacturing capabilities (that could be applied to VRPs).	OPPORTUNITIES	<i>Favourable situations in the environment that enable the UK-wide adoption of VRPs:</i> • International focus on emissions reduction (policy level) – would increase awareness of VRP activities for consideration in trade policy • Increasing feasibility/acceptance of carbon tax measures – would increase competitiveness of VRP activities. • Increasing interest internationally e.g. Canada – VRP strategy, EU – Circular Economy Action Plan, USA – Circular Economy, China – 5-year strategy, Wales and Scotland – opportunities to collaborate. • New markets, such as renewables and EVs. • Leveraging existing business advisory services.
WEAKNESSES	<i>Limitations, faults or defects that may hinder the UK-wide adoption of VRPs:</i> Declining manufacturing base. • Ageing manufacturing/VRP work force. • Absence from public procurement. • High labour costs. • Weak industry-academia engagement on VRP topics. • Restrictive policies on waste. • Lack of visibility (industry statistics, consumer awareness). • Unfavourable perceptions of VRP activities.	THREATS	<i>External barriers and challenges to the UK-wide adoption of VRPs:</i> Competition from low-cost imports. • Development of remanufacturing hubs outside the UK. • Uncertainty in trade/tariffs. • Post-Brexit customs challenges.

Economic multipliers

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N.B. expressed as
jobs per \$CAD 1m

Multiplier Type	Output	GDP at Market Prices	Labour Income	Taxes on production	Jobs
Automotive Repair and Maintenance					
Direct	1	0.598	0.459	0.011	10.398
Indirect	0.487	0.267	0.147	0.014	2.606
Induced	0.492	0.325	0.133	0.022	2.772
Simple	1.487	0.865	0.606	0.025	13.003
Total	1.979	1.190	0.739	0.047	15.775
Repair and Maintenance (except automotive)					
Direct	1	0.608	0.463	0.008	8.858
Indirect	0.497	0.270	0.149	0.014	2.660
Induced	0.495	0.327	0.134	0.022	2.787
Simple	1.497	0.878	0.613	0.022	11.518
Total	1.992	1.205	0.747	0.044	14.305

N.B. Subsequent work for Metro Vancouver B.C. differentiated Reman, Repair, Reuse and Recycling multipliers (\$ and jobs)

Thank You for Attending

