

Complex Value Optimisation for Resource Recovery (C-VORR)

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Waste = Resource

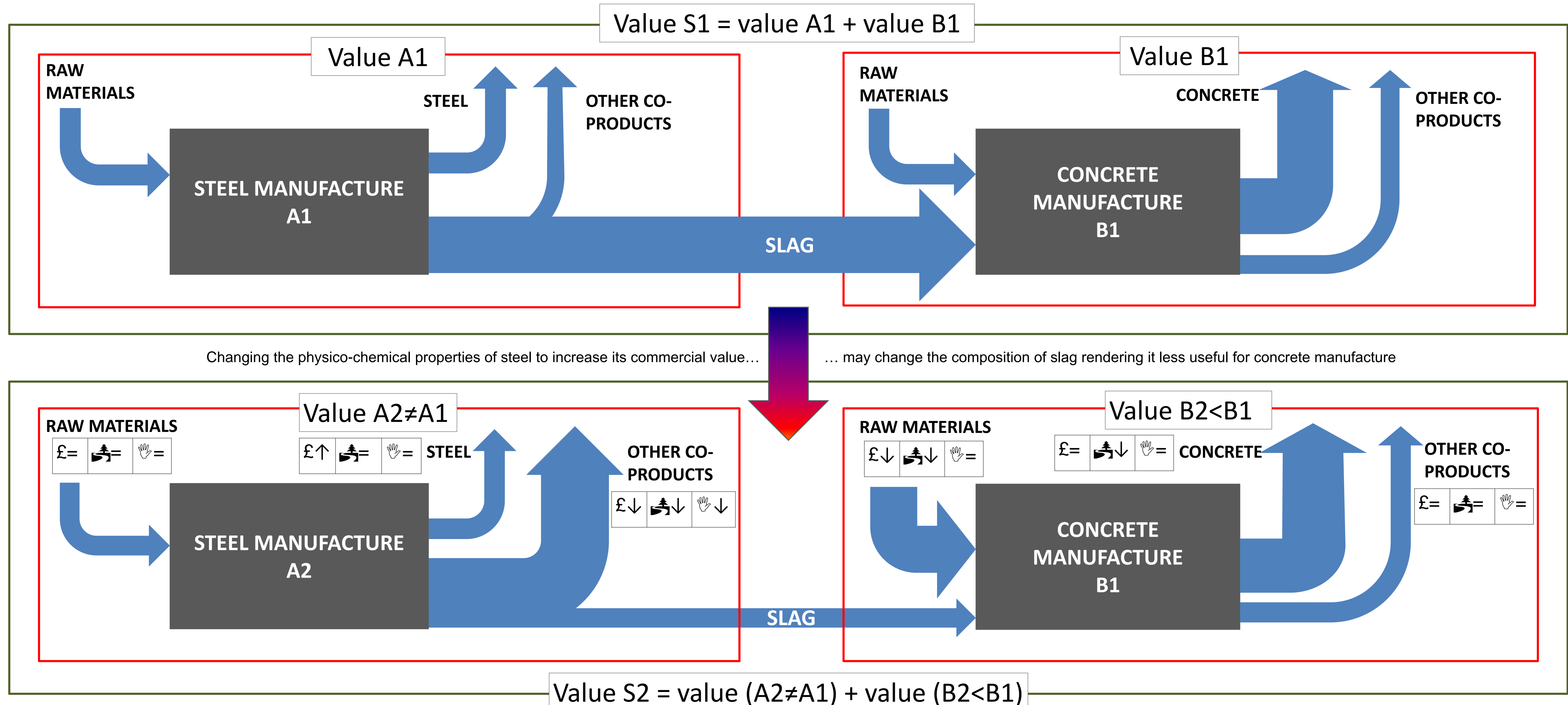
“Waste as a resource” has become a truism. Industrial processes are considered to generate products and co-products with different economic, environmental and social values, rather than simply ‘products + wastes’. Processes can then be designed, using a systems focus, to optimise the total value of all outputs.

Purpose of C-VORR catalyst project

- build an expert project team across different disciplines
- assess current approaches and initiate prototype framework development
- identify relevant case studies to explore framework development

Aims & objectives of research project

- develop a novel valuation framework
- optimise multiple economic, environmental and social values
- encourage departure from established notions of waste, and progress towards a sustainable society with circular materials flow



Case study example: The manufacturing processes of steel and concrete have the following values when considered separately:

Conventionally, **steel** has:

- high economic value (£↑)
- high social value (☝↑)
- negative environmental value (♻️↓)

The **slag** has:

- negative economic value (£↓)
- neutral or zero social value (☝=)
- negative environmental value (♻️↓)

The slag can be used as a cement replacement material and hence is a resource, not waste (see figure) which:

- increases the economic value (£↑)
- increases the social value (☝↑)
- increases the environmental value (♻️↑)

If the system is shifted to produce a different type of steel, the chemistry of the resulting slag will prevent its use in concrete, so:

- economic value of steel increases but slag declines
- social value might decline (fewer jobs)
- environmental value decreases (slag to landfill)

Contact us: For more information, to find out about our workshops or join the mailing list, please contact one of the team:

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