

Research Project: Environmental Protection & Justice: Extended Producer Responsibility Regulation.

Researchers: Prof Robert Lee, Prof Peter Wells, Dr Margarete Seitz, Prof Ken Peattie, Frances Hines, Andrew Williams, Lauren Darby, Louise Obara

Background: Extended Producer Regulation (EPR) is a central element of sustainability orientated regulatory efforts in some of BRASS's key industries including the automotive and the electronics industries. It creates some particularly interesting challenges in terms of the management of stakeholder relationships within business supply chains because the process of reclaiming value from consumers via end of use/life products transforms linear supply chains into supply loops or networks, and changes the role of consumer into that of a re-supplier of value. This, and the range of practical management challenges that EPR tends to pose, generates a significant range of social science questions in the field which need to be better understood and answered.

Aims and objectives:

- To contribute to the theoretical understanding of closed-loop manufacturing systems being developed by companies partially in response to new EPR regulations;
- To evaluate the practical feasibility and economic viability of adapting conventional forward logistics systems in an industry supply chain into two-way components of a closed loop system;
- To explore management perceptions and practical implications in relation to the implementation of EU EPR regulation for UK businesses.

About the research:

There were two core elements to BRASS EPR research relating to the electronics and automotive industries as two of BRASS's initial key industrial sectors:

- Firstly work in the electronics industry with a focus on the implementation of the European WEEE and RoHS Directives within the UK. It included desk-based research, key stakeholder interviews with regulators, industry stakeholders and NGOs, a company placement and a quantitative survey into stakeholder perceptions of WEEE and RoHS Directives which 205 businesses responded to. BRASS also undertook two regulatory impact assessments on the transposition of Article 6 and Annex I of the End of Life Vehicles Directive (2000/53/EC). The WEEE orientated work also included work for the Northern Ireland Government on battery based technologies and WEEE.
- Secondly a case study of a reverse logistics operation linked to Mercedes-Benz's European engine remanufacturing plant. This involved a researcher embedded within the company's operations, with the research both generating a consultancy report for the company on the effectiveness of the reverse logistics and remanufacturing operation, and representing the primary research for a PhD project. This project involved interviews of a range of stakeholders, documentary analysis and observations of the remanufacturing operation in practice.

Results and outputs:

The study considering the UK's transposition of the European WEEE Directive revealed that it had been hampered by a lack of understanding and confusion amongst business; by a lack of clear, reliable and accessible information; and by the ramifications of the split in responsibilities between the (then) DTI and Defra. The lessons highlighted by the research into the problems with the transposition of the European WEEE Directive have the potential to inform and improve the implementation of other EPR-based sustainability measures aimed at business supply chains.

The work with Mercedes-Benz on their engine reverse logistics and remanufacturing system primarily provided a practical proof that conventional forward logistics systems could be successfully adapted to provide reverse logistics as well (an issue which a number of theoreticians in the field had cast doubt over). It also revealed some of the unusual management challenges involved in developing such a system including extending the retention of customer relationships beyond the normal car warranty period, encouraging new product designers to incorporate features that would facilitate the re-manufacturing process, and dealing with the problem of part proliferation for re-manufacturing caused by increasing diversity in engine specification.

- Lee, R. (2008), [Marketing products under the latest Extended Producer Responsibility Framework: A battery of issues](#), *Review of European Community & International Environmental Law*, 17 (3), 300-307
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- Williams, A., (2007), [Product service systems in the automobile industry: Contribution to system innovation?](#) *Journal of Cleaner Production*, 15, 1093-1103
- Wells, P. and Seitz, M. (2006), [Challenging the implementation of corporate sustainability: The case of automotive engine remanufacturing](#), *Business Process Management Journal*, 12 (6), 822-836
- Darby, L. and Obara, L. (2005), [Household recycling behaviour and attitudes towards the disposal of small electrical and electronic equipment](#), *Resources, Conservation and Recycling*, 44 (1), 17-35
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Impacts achieved/potential for impact:

The work with Mercedes-Benz was directly engaged research with the researcher who had been embedded within their remanufacturing operation providing a consultancy report to the firm's management on the operations effectiveness and potential areas for improvement.

For the work on electronics, two reports were generated in 2006 as a result of the UK business survey to reflect the indicative findings regarding business opinion WEEE and RoHS which were distributed to key stakeholders including the DTI and DEFRA, industry associations and representative bodies and others. Media coverage during 2006 included through: The BBC including on Radio 4's 'Click On' programme, The New Statesman, ESRC Society Today, Materials Recycling Week, Finishing Magazine On-line and regional news and current affairs media. BRASS EPR research in electronics generated interest at EU, UK and devolved government levels.

This work also made a direct impact through Regulatory Impact Assessments for DOE Northern Ireland including - on the transposition of Article 6 and Annex I of the End of Life Vehicles Directive (2000/53/EC); on the transposition of Article 6 and Annex I of the End of Life Vehicles Directive (2000/53/EC); on the transposition of Article 6 and associated Annexes of the Waste Electrical and Electronic Equipment Directive (2002/96/EC); on the transposition of Article 6 and associated Annexes of the Waste Electrical and Electronic Equipment Directive (2002/96/EC); and also Guidance on Best Available Treatment, Recovery & Recycling Techniques (BATRR) for Waste Electrical and Electronic Equipment.