

Briefing: Waste management techniques and environmental solutions – a significant association

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This briefing article presents the waste issues and concerns from a broader environmental perspective. In doing so, the briefing demonstrates a significant and complex relationship between environmental solutions and waste management techniques. Shedding light on such an association enables the author to argue about current dominant waste management solutions (recycling and recovery) and other technological solutions – rethinking problems rather than solving them. Simultaneously, the reader is directed towards the importance of reuse, which is currently overshadowed in the waste hierarchy by the term ‘preparing-for-reuse’.

1. Introduction

This briefing article forms part of a larger PhD research investigation into reuse behaviour at the organisational level in the UK. The briefing presents a significant association between waste management techniques and environmental solutions, while acknowledging the complexity surrounding it. For the purpose of this paper (and research), waste management techniques are regarded as elements of the waste hierarchy and environmental solutions are analysed and narrowed down into two categories – relative decoupling and absolute decoupling.

2. Literature review

The UK waste history indicates that transitioning of economy from capitalism to natural capitalism started long after the Industrial Revolution: it was when the rise in production of waste and consumption of resources were first recognised as concerns leading to environmental issues. It was in the year 1999 when Hawken *et al.* (1999) introduced natural capitalism, a step towards facilitating sustainable economic progress. Following this, in 2000, Pearce and Barbier (2000) differentiated between human capital and natural capital, which they further explained by associating them with weak sustainability and strong sustainability, respectively. It was during the same period of time when the UK government introduced the first waste hierarchy, with the aim of reducing the volume of waste disposal to landfill.

The research acknowledges the significance of the similar time period of these developments – in the field of sustainability and in the area of waste management. The research analyses definitions and arguments regarding weak and strong sustainability, and integrates these theories with waste management techniques. In doing so, the research shows that the recent

dominant waste management techniques, namely recycling, recovery and disposal, could potentially be categorised under the area of weak sustainability. This is due to the fact that these waste management techniques use technological solutions, which although they reduce the volume of waste going to landfill are unable to balance the decrease in waste production while simultaneously maintaining economic growth.

Recognising the complexity of creating a balance between economic and environmental growth, Urry (2010, 2011) suggested two approaches to tackle the problems presented by climate change. These approaches are the science-first model and the human action model. Of these two, the science-first model represents the engineering of cleaner and cleverer technologies to combat the negative environmental impact of climate change, while facilitating economic growth.

Within the waste management techniques, some of the examples of these technological solutions are: recycling, recovery, remanufacturing, reverse logistics, product service system (PSS), and closed-loop supply chain (CLSC). These technologies are clearly important; however, the complexity surrounding the issues associated with the cost of these processes could be considered as a disincentive (Atasu *et al.*, 2008; Feldmann *et al.*, 1999; Kumar and Malegeant, 2006; Kumar and Tan, 2006). Furthermore, despite the use of these science-first model solutions, there is a continuous rise in consumption (a 15% increase between 2000 and 2012) (ONS, 2013) and an increase in waste production at the organisational level in the UK (a 4.85% rise between 2010 and 2012) (Defra, 2015).

Given the current unsustainable situation and the alarming rate of environmental degradation, several studies (some of which are illustrated below) demonstrate this problem, and

their conclusions present the unequivocal necessity of recognising balanced and strong sustainable solutions.

- Jackson (2009: p. 13) indicates that ‘...in the waste market, since technological developments have allowed recycling and recovery activities, the global economy has grown more than 5 times’. However, the continuing environmental degradation shows that ‘... if current population and consumption trends continue, by the 2030s, we will need the equivalent of two Earths to support us’ (GFN, 2015).
- Atasu *et al.* (2008) argue in their study on CLSC that purely technological approaches are insufficient: they fall short because they do nothing to change what amounts to unsustainable consumption behaviour.
- Mark Lynas’ book *Six Degrees* (Lynas, 2008) indicates that there is reasonable stability in the science-first model of climate change; however, solutions through human action have not been well established.

While recognising the insufficiencies of technological advancements, the Organisation for Economic Co-operation and Development introduced the concept of decoupling as ‘... breaking the link between “environmental bads” and “economic goods”’ (UNEP, 2011: p. 4). This concept is further divided into relative decoupling and absolute decoupling. Technological processes progressing towards early carbon dioxide reduction are considered as achieving relative decoupling (Jackson, 2009). In contrast, absolute decoupling is defined as ‘...no waste growth’ (Sgostrom and Ostblom, 2010: p. 1550).

When exploring the associations of relative decoupling with waste management techniques, the research shows a commonality. The current dominant waste management techniques, namely recycling, recovery and disposal, and similar other waste management techniques, such as reverse logistics, CLSC, PSS and remanufacturing, could potentially be considered as solutions in order to achieve relative decoupling.

3. Discussion

The continuous technological developments and their adaptation by the growing industry certainly represent positive outcomes in terms of achieving relative decoupling. However, the concerns about the increasing use of resources, the rise in consumption and the growing levels of waste production demonstrate that the industry’s predominant focus towards technological solutions is insufficient because these approaches involve ‘rethinking the problem rather than solving it’ (Pearce and Barbier, 2000: p. 250). Furthermore, since the current dominant waste management techniques are identified as weak sustainable solutions, it could be implied that there is an

association between the science-first model and weak sustainability.

Therefore, in the current challenging climatic environment, relying on technological solutions alone is not enough and thus, this briefing article (and the research) emphasises that considering human-based solutions to achieve an absolute decoupling is one of the essential requirements for the economy. This is reinforced by the fact that absolute decoupling presents a means of discovering a middle ground or consensus between conventional economic growth and waste reduction in order to protect the environment, and, it can also be argued, as representing a ‘highly contested’ type of sustainable development (Chatterton and Style, 2001).

Within the waste management techniques, reuse is a purely human action, which is currently overshadowed in the waste hierarchy by the term ‘preparing-for-reuse’ (Tavri, 2017). Furthermore, research found out that the manufacturing and waste service sectors particularly do not consider reuse as a crucial activity, meriting a change in behaviour. In addition, for these organisations the engagement with technological solutions is relatively easy and has become normalised, which makes reuse a comparatively unappealing potential activity, unless it becomes mandatory or necessary. Such perceptions within the manufacturing and waste service sectors could perhaps be considered as potential short-sightedness, where the current ease, accessibility and profitability of technological solutions overshadow any potential long-term benefits which might be gained by exploring the strategies towards reuse, and the resultant profitability of reuse, both for the organisation, and for society as a whole.

Nonetheless, research illustrates that based on the types of material and collaboration among the types of sector, reuse could be considered as possessing the capability of resolving the seemingly irreconcilable dichotomy of reducing waste production while maintaining economic growth, in order to achieve an absolute decoupling. In particular, this is evident among retail and construction sectors. They consider themselves as forerunners in the field of reuse, and present several collaborative pilot studies demonstrating the economic, environmental and social benefits of reuse. They consider reuse as a realistic practice instead of simply an idealistic opportunity. Furthermore, this initiative for change is also seen within their reuse supply chain, which is predominantly third sector organisations.

4. Conclusion

This briefing article (and the research) is not stating that recycling and recovery (or any other technological solution) is not significant. Rather, is indicating that it is important to

acknowledge that collaborative reuse measures could lead to absolute decoupling. Furthermore, it is crucial for the industry to understand the association between waste management techniques and environmental solutions. This awareness, when applied to real-life situations, could present a holistic view for businesses to use technological and human-based solutions in an effective way, in order to achieve a long-term circular economy. The result of these changed behaviours and attitudinal shifts would effectively lead the industry to adopt a new 'normal' behaviour – a behaviour where organisations prioritise environmental solutions and waste hierarchy, while creating business development strategies.

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