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A REVIEW OF THE RESEARCH ON HOUSEHOLD TRASH PREVENTION

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ABSTRACT

Based on a UK portfolio of primary research and a wide international assessment, this article presents a synthesis of policy-relevant data on home trash prevention. Waste prevention was defined as rigorous avoidance, source reduction (e.g., at home composting), and reuse (for the product's intended purpose) - recycling was not included. Consumers were a primary emphasis. The review revealed a general hierarchy in their popularity, ranging from donating goods to charity at the top to small reuse behaviors around the home to activities involving changes in consumption habits at the bottom; one estimate is that 60% of the public engages in at least one of these activities, at least some of the time. Modern consumer culture, as well as a real misunderstanding that waste reduction is the same as recycling, are both barriers to homeowner engagement. With a broad variety of interventions and communications methods available, the public may be involved via local or nationwide campaigns. Increased reuse was highlighted as the main potential within the scope of the assessment on the product and service side. Operational challenges (financing, capacity, logistics) and customer attitudes regarding used products were among the roadblocks. The major possibilities are for local governments to do more strategic planning for reuse, as well as for greater coordination and collaboration with the third sector.

KEYWORDS: *Behaviour, Evidence, Household Waste, Reduction, Waste Prevention.*

1. INTRODUCTION

Late in 2003, the UK Department for Environment, Food and Rural Affairs (Defra) launched the Waste and Resources Evidence Programme (WREP). The goal of WREP is to create a solid waste and resource evidence base, make it easier to utilize for policymaking, and guarantee efficient communication with all stakeholders(1). WREP operates within the context of Defra's model for evidence flow in the policymaking process. The word "evidence" is defined further down. For the first time, the new initiative aimed to provide a strategic perspective of the UK's total waste and resource research requirements(2). A multi-stakeholder Waste and Resources Research Advisory Group (WRRAG) was formed to look forward ten years and create an initial three-year R&D plan via a consultation process, which was started in September(3). A review of progress over the first three years of the evidence strategy is available, as is a review of progress over the second three years of the evidence strategy. WREP was selective in focusing their

efforts on those research areas that were seen as a particular gap, and which were either current or would likely become policy priorities for Defra at the time of the first strategy in 2004, when there were perhaps 30 UK organizations that were active players in waste and resources research in the UK(4).

WREP chose home waste prevention as one of its priority areas(5). An early scoping study was commissioned to compile current evidence on elements of behavior modification secondary research, equivalent to the bottom ellipse. In 2005 or 2006, a total of 18 more studies were commissioned, ranging from consumer behavior in connection to home waste reduction to examining how various programs function in practice to evaluating possible legislative options(6).

There was a combination of secondary and primary research matching to the top ellipse, with durations ranging from a few months to three years. Waste avoidance was identified as a priority in Defra's Waste Strategy for England, as expected(7). The new Waste Framework Directive, which compels all EU member states to implement their own national waste avoidance programs by December 2013, reinforces this focus. In addition to the research conducted by Defra's WREP, the UK Waste and Resources Action Programme (WRAP) has progressively extended its focus beyond establishing recycling markets to include relevant evidence work on domestic waste avoidance(8). When WREP's portfolio of home waste reduction initiatives neared completion in late 2008, it was decided that the moment had come to bring everything together(9). In order to provide an accurate and up-to-date picture of current policy-relevant research regarding home waste reduction and related pro environmental behavior, Defra's WREP commissioned a large synthesis review effort(10). The study followed the bottom: scoping the research topics of interest, gathering existing and developing data, and interpreting the findings with policymakers and other stakeholders, both to guide policy choices and to identify remaining gaps in the evidence(11). The findings are presented in this article(12). The evaluation concentrated on WREP, WRAP, and other UK government evidence projects, but it was decided to expand the scope to include additional ‘grey literature' (including those supplied by stakeholders) as well as a systematic search for other globally accessible, policy-relevant information(13).

The review is thus worldwide in scope in terms of published and peer-reviewed work, but it is unavoidably more UK (and indeed English) oriented in terms of more specific examples drawn from government and other grey literature sources(14). Table 1 offers some data on home waste management in England to assist the reader in connecting the examples, particularly the estimates of the effect on waste amounts of various waste avoidance methods, to their own circumstances. The evidence assessment used definition of waste prevention, which included rigorous avoidance (not producing trash in the first place), source reduction, product reuse (in its original form), and waste hazardousness reduction. All types of recycling, including food collecting and commercial composting, as well as remanufacturing, are excluded from this definition. The latter is often included in a wider definition of "waste reduction," and it’s worth noting that stakeholders participating in the study didn't always distinguish between recycling and prevention. Article 3 Clause 12 and 13 of the Waste Framework Directive which came into effect midway during the review) defines ‘prevention' as actions done to minimize trash before a substance, material, or product becomes waste.

Evidence may be defined as whatever data that Defra can utilize to translate its policy objectives into something tangible, attainable, and controllable(15). It may take a variety of forms, including research, stakeholder analysis, economic and statistical modeling, public views and beliefs, anecdotal evidence, and cost-benefit assessments, as well as a judgment on the quality of the techniques used to collect and synthesize the data. There are three types of evidence for policymaking. The first is hard data facts, trends, and survey results, while the second is analytical reasoning, which puts the hard data into perspective(16). Finally, an evidence base is made up of stakeholder opinions on a particular problem or group of concerns. The rationale for this three-part method is that if the hard data on which you're based a policy choice has any flaws, you'll have to rely on the analysis that supports the data. If the analysis has any flaws, or if there's a chance that others may provide a different interpretation, you'll need to revisit your stakeholder base to understand the many interpretations that might lead to different assessments of the same piece of data. Many different stages in a product's life cycle may be used to reduce waste(17).

2. DISCUSSION

The study concentrated on the middle portion of the life cycle - the main ‘touch points' with the customer (i.e. supply/purchase, consume, and dispose) since the review's emphasis was on household waste prevention. Not all of the subjects covered in these three stages of the life cycle are directly related to household waste avoidance, but some of the issues covered in the previous step of "produce" and the following step of "collect" are. The review focused on the areas highlighted as ‘above the line'; those areas ‘below the line' were either ignored shown in dark type because they were outside the scope of the review, or were briefly mentioned shown in light type and italics, such as voluntary agreements (VA), minimum standards, and eco-labelling, because the project steering group thought they had some merit. Commercial and industrial waste avoidance, producer responsibility, product lifetime and eco-design, all of which the steering group considered to be significant issues in their own right; and obligatory deposit systems, which the steering group considered to be major topics in their own right. Consumer behavior change is a major topic in this evidence assessment. depicts Defra's Behaviour Change Framework, often known as the "4Es," which was originally presented in the United Kingdom's Sustainable Development Strategy(18). According to the 4Es evidence-based approach, there are numerous variables that must be addressed concurrently in order to promote change for each behavior. The complexity of behavior change treatments must be reflected in a "package" of measurements. The framework emphasizes the importance of the following activities. Around 1000 possible sources were identified throughout this scoping study. These were categorized based on how well they covered certain ‘domain areas' of home waste prevention. They were also evaluated for the presence of quantitative or qualitative ‘evidence' as opposed to generic descriptions of what individuals did), as well as the perceived robustness of the available evidence.

Other sources including self-reported and qualitative information passed the first screening and were recognized as giving important input to the evaluation, although they tended to be examined at a less comprehensive level. The short-listed papers were scrutinized to verify that they covered all of the domain areas mentioned. A number of writers have utilized behavior change theories to explain or predict waste prevention behavior. One of the most frequently studied theories is the idea of planned behavior, which claims that a person's intention to act is

influenced by three factors: their attitude, their ability to act known as "perceived behavioural control", and broader societal standards. Intention is anticipated to transfer into action under the appropriate external circumstances e.g., no restricting obstacles. The theory of planned behavior is one of several social psychology theories being investigated and used in pro-environmental behavior modification research [such as Defra's sustainable consumption. The following are essential concerns at a practical level, according to this corpus of applied theory. Studies that attempted to explain waste avoidance behavior using statistical models or behavioural theory testing have shown that their models had little explanatory ability. Two major studies discovered that 70 to 85 percent of behavioral variance could not be explained. The difficulty in describing waste avoidance behavior may be due to the fact that it is really a collection of behaviors. Furthermore, it's conceivable that the models are missing inputs that are behavior drivers but have nothing to do with waste, environmental values, or world views for example, the strength of purchase and food management drivers in WRAP's food waste study.

The challenges that such modeling activities confront stem in part from the fact that there is no theoretical agreement on behavior modification. Nonetheless, the research identifies a variety of reasons. Because the literature does not offer a clear ranking, the following are the most often cited in the research examined (just provided in the same order as theoretical drivers listed above). Recycling motivations are often characterized as more functional and affected by external circumstances than waste avoidance motivations. Several writers connect waste avoidance behavior to underlying human values, particularly so-called "universal", which are "usually when an individual places communal advantages ahead of their own personal gain." Moral and philanthropic motives have also been identified as drives for reuse particularly donation, as well as a ‘ethic of care' – a broad feeling of responsibility for the intrinsic worth or on-going usage of ‘things.' Accepting personal responsibility is often mentioned as a prerequisite for preventive behavior. It may take the form of a feeling of responsibility or obligation, pleasure, shame or lack thereof in the case of secondhand items, guilt, and active concern, for example. Avoiding food waste paying less on food, home composting via subsidy of bins, carrying bags charging, purchasing from charity stores, interest in refills, and moving from bottled to tap water have all been proven to be significant motivators. Money savings, on the other hand, is a complicated motivator that must be balanced against the danger that customers may view cheaper or alternative goods as poorer quality or sub-optimal choices see the refillables section below).

Knowing or observing that others are taking action may provide the impression that one's own efforts are worthwhile According to a nationwide study in the United Kingdom, 5– 10% of home composters began because of encouragement from friends. Social norm effects and peer support are often used in behavior change programs centered on small groups of people working together, and some have shown substantial reductions in the number of people who participate. At least in the United Kingdom, campaigns and interventions addressing a wide variety of waste avoidance behaviors are a relatively new field for local governments. ‘Intervention' is a broad word that refers to any action or initiative aimed at bringing about change; ‘campaigns' are communication procedures aimed at raising awareness, encouraging involvement, and promoting change, among other things.There's also a distinction to be made between interventions and campaigns that target large groups of volunteer homes where there's now more evidence and those that target small groups of volunteer households where there's currently more evidence.

The first's results are averaged over all homes in a given region, regardless of whether or not individuals follow the advice; the second's results are based exclusively on the performance of those who agreed to participate. There is some proof. The exact size and nature of the reuse industry in England are presently unclear (though it has been extensively studied in London).

Based on the data, it is estimated that about 500 000 tonnes of waste are repurposed in England each year. This estimate was compiled from a variety of sources and does not include recycling. It is expected to include 270 000 tons of bulky goods and 230 000 tonnes of clothing/textiles (there is no accurate data on textiles, and estimates differ - this number should not be regarded as final). WRAP has verified that our estimate of 500 000 tonnes reused (excluding recycling) is likely to be on the same scale as that being produced in their present study. This estimate excludes commercial outlets like as eBay and car boot sales, as well as Freecycle, which is rapidly growing in the United Kingdom. A vast number of local charities and a few major social businesses, as well as nationally coordinated charity stores, make up the third sector's participation in trash operations. The organization's primary motive is frequently (but not always) social aims, with waste operations serving as a method of accomplishing those goals. The skills and function of a waste operator/contractor are shaped by an organization's attitude, whether it views itself as a "waste company" or not. In Europe, there are examples of a more established secondhand retail industry and/or better integration of reuse groups with the bulky trash infrastructure of local governments. Flanders, a Belgian area, is a good example of the latter. The barriers that have been mentioned in the literature have been summarized. These companies' success characteristics are a reflection of the obstacles, and include the following specific instances.

The authors are generally upbeat about the possibilities and development of reuse initiatives in general, as well as those involving third-party organizations. The WEEE directive's revisions are intended to boost reuse activity: According to the Furniture Recycle Network (FRN), it is possible to boost appliance reuse from 500 000 to 1 million pieces per year (FRN, undated). Stakeholders engaged during the study also indicated that the new national indicators for local governments (NI, undated) (which include reuse) could motivate governments to seek reuse as a way of reducing landfill waste. The major obstacles to increased refill use are largely agreed upon by the authors. Consumers anticipate refills to be less expensive than original goods, however being less expensive may also imply that the product is of lesser quality. Retailers and manufacturers are also influenced by perceptions, particularly a belief that retail volumes would be too low to provide acceptable profitability. Consumers appreciate the idea that refills help the environment, however this is not considered to be a major reason for purchasing. The PSS (which may potentially include house cleaning, garden care, or home repair) would be provided through a regular subscription or an ad hoc call out in the ideas examined. The service would be managed by the home developer through a customer contact center and service agreements with vendors. In separate workshops, the ideas were evaluated with customers and development employees, and potential waste and other environmental benefits were quantified for various situations. Consumers were generally interested in the concept of PSS, but were hesitant to use it as a replacement for owning products; instead, they preferred PSS as a complement to 'self-service'– that is, being able to do the task themselves when they wanted to, implying that they would need to own the relevant appliance in addition to using the PSS. A typical economic trade-off between time and money was the primary factor determining whether or not customers

appreciated the concept of PSS. PSS was more popular among individuals with greater earnings but limited time than among those with lower incomes or who were retired.

3. CONCLUSION

A number of important questions were formulated collaboratively with the Defra policy teams at the start of this evidence assessment. The conclusions are written in the form of answers to those questions. With a few noteworthy exceptions, the evidence showed numerous limits in the data available to address this issue. The fact that no two studies question families about the identical array of waste reduction behaviors is a major source of evidence weakness. Unlike recycling, waste avoidance entails a variety of behaviors. There is no clear definition in the literature of which particular behaviors constitute "waste avoidance," apart from top-level definitions like the Waste Framework Directive.

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