

EXTENDED PRODUCER RESPONSIBILITY – POTENTIALS FOR MANAGING PLASTIC WASTE IN GHANA

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ABSTRACT

Drinking water is sold to majority of Ghanaians in plastic sachets of 500ml. After consumption, these sachets are discarded randomly. The increasing quantities of plastics churned out and the inability of duty bearers to cope with the increase makes it essential to assess the lifecycle of sachet water and the roles stakeholders connected to its lifecycle play in managing the waste thereof. Producers and consumers have some of the key possibilities to contribute to waste management efforts within the extended producer responsibility (EPR) concept. This paper provides a panorama of the extended responsibilities of sachet water producers towards plastic waste management, assesses the motivation for producers to engage in waste recycling practices and ways to influence both producers and consumers towards a transition to sustainable production and consumption behaviour. The study was carried out in the Wa municipality using institutional questionnaires. It was observed among others that although producers were retrieving empty sachets for recycling through self initiatives they also linked the problems associated with plastic waste management in the municipality to consumer behaviour.

Keywords: Management, Plastic, Producer, Responsibility, Sachet, Sustainable, Water, Waste

INTRODUCTION

Municipal solid waste is one of the most important by-products of an urban lifestyle (Hoornweg and Bhada-Tata, 2012). As a result increases in waste generation is often associated with urbanisation, economic and population growth. Sjöström and Östblom (2010) provide evidence that waste per capita increases can be closely correlated with increases in economic growth. Such a relationship between waste generation and economic and population growth calls into question the sustainability of meeting human needs within an ecologically finite Earth. The World Business Council for Sustainable Development (2008) for example reported that if everyone adopted the lifestyle of an average North American, the resources of 5 planets will be needed to support such lifestyles globally. This implies population growth coupled with economic prosperity could increase pressure on the environment through increasing resource extraction and growing waste generation and disposal.

Increases in the volume of waste generated do not necessarily constitute the problem in itself; on the one hand is the inability of governments and waste disposal firms to keep up with it (Onibokun and Kumuyi, 2004). The inadequacies in capacities of governments to keep up with waste generation make waste management a huge problem especially in developing economies (Guerrero, Maas and Hogland, 2012). Hoornweg and Bhada-Tata (2012) expatiated that improper waste management jeopardizes environmental quality and public health.

The economic growth and rapid urbanization experienced in Ghana over the past decade show how waste management is a problem. Increasing urbanisation coupled with economic growth over the past years, without concomitant increases in the capacity of duty bearers to sustainably manage municipal waste, has made conspicuous the gaps between quantities of waste generated and waste collected and disposed. For example in the city of Accra, Anomanyo (2004) reported that within the period of 1993-2003 there was no equilibrium between quantity of waste generated and quantity of waste collected and disposed. Within the period an average of between 14.50% to as high as 30.08% of solid waste generated in the metropolis could not be collected. Quantities of waste generated continue to increase without similar increases in quantities collected due to capacity inadequacies (Anomanyo, 2004). This situation is also reflected in all the major cities in the country (Mariwah, 2012).

Quantities of waste plastic have also increased over the last decades (Fobil and Hogarh, 2006). Plastic waste as a component of municipal waste is becoming a huge menace in the country (Wienaah, 2007; Stoler, 2012; Environmental Health and Sanitation Directorate, 1999). This status quo is being shared by the proliferation of sachet water known colloquially as “pure water” and other products packaged using plastics. Drinking water packaged in plastic sachets of usually 500 millilitres is increasingly being consumed in large quantities in the country due to water supply shortages, low prices, ubiquity and consumer perception of pure water having a higher quality than tap water (Stoler et al, 2012). These plastics have short “useful” lifecycles and are usually discarded indiscriminately at the convenience of the consumer. This has left many towns painted with empty sachet bags, chocking gutters, disdaining the landscape and aborting the aesthetics of the landscape. Several attempts have been made to ameliorate the menace including the distribution of litter bins, clean up campaigns, instituting tasks forces to monitor consumer disposal of empty water sachets, fines on consumers found littering just to mention but a few through collaborations between various

Metropolitan, Municipal and District Assemblies (MMDAs) and private waste management companies. These have however, not yielded the anticipated results as plastic waste is still littered randomly.

This situation makes it essential to take a holistic view of plastic waste management in the country. Hansen, Christopher and Verbuecheln (2002) argue that challenges in managing plastic waste are not only linked with the inadequate and inefficient disposal capacities of duty bearers but also essential are consumption behaviour, income levels and perception of consumers. It stands to reason therefore that, without parallel efforts aimed at directly influencing producer and consumer behaviour, the adequate management of waste cannot be tackled only with technical end-of-pipe technologies. Sander (2007) emphasizes the need to create the link between the production and the waste phases of a product.

Linking the production phase and the waste phase encourages producers to engage in practices that minimise waste. Producers have the greatest possibilities to initiate sustainable waste practices through product redesign, waste minimisation, promote less wasteful products and facilitate reuse of the product at the end of its life (OECD, 2001). This makes it imperative to take a critical assessment of the extended roles of sachet water producers in solving the plastic waste menace in the country. This paper presents the situation in the Wa municipality by assessing the extended responsibilities of sachet water producers in managing the empty water sachets within the sachet water supply chain, the motivation of producers to engage in waste recycling and finally ways to influence both producer and consumer behaviour towards efficient management of plastic waste emanating from sachet water in the municipality.

MATERIALS AND METHODS

The data requirements for this study were met using a combination of methods. Scientific papers served as major source of secondary data especially in conceptualising the theme of the topic. Primary data was collected from sachet water producers in the municipality using institutional questionnaires. Purposive sampling method was used to sample sachet water producers. At the time of this study there were a total of 17 sachet water producers in the municipality. Out this number 3 of the producers were seasonal producers and were not in operation at the time this study was conducted – from December, 2012 to February, 2013. The remaining 14 producers were captured by this study, thus covering 100% of all-year-round sachet water producers in the municipality. The qualitative and quantitative data collected were then collated and analyzed using Statistical Package for Social Sciences (version 16) and results presented in this paper.

Setting of Study

The Wa Municipality is located in the Upper West region of Ghana. See figure 1. It lies within latitude 1°40'N and 2°45'N and longitude 9°32'W to 10°20'W with an area of about 23,474km². It is located within the guinea savannah ecological zone of Ghana. The capital of the municipality, Wa also doubles as the regional capital. It serves as the centre of concentration of population, social and economic capital as well as governance structures within the region. In 2010, it was inhabited by 107,214 people representing 15.3% of the total population of the region (Ghana Statistical Service, 2013).

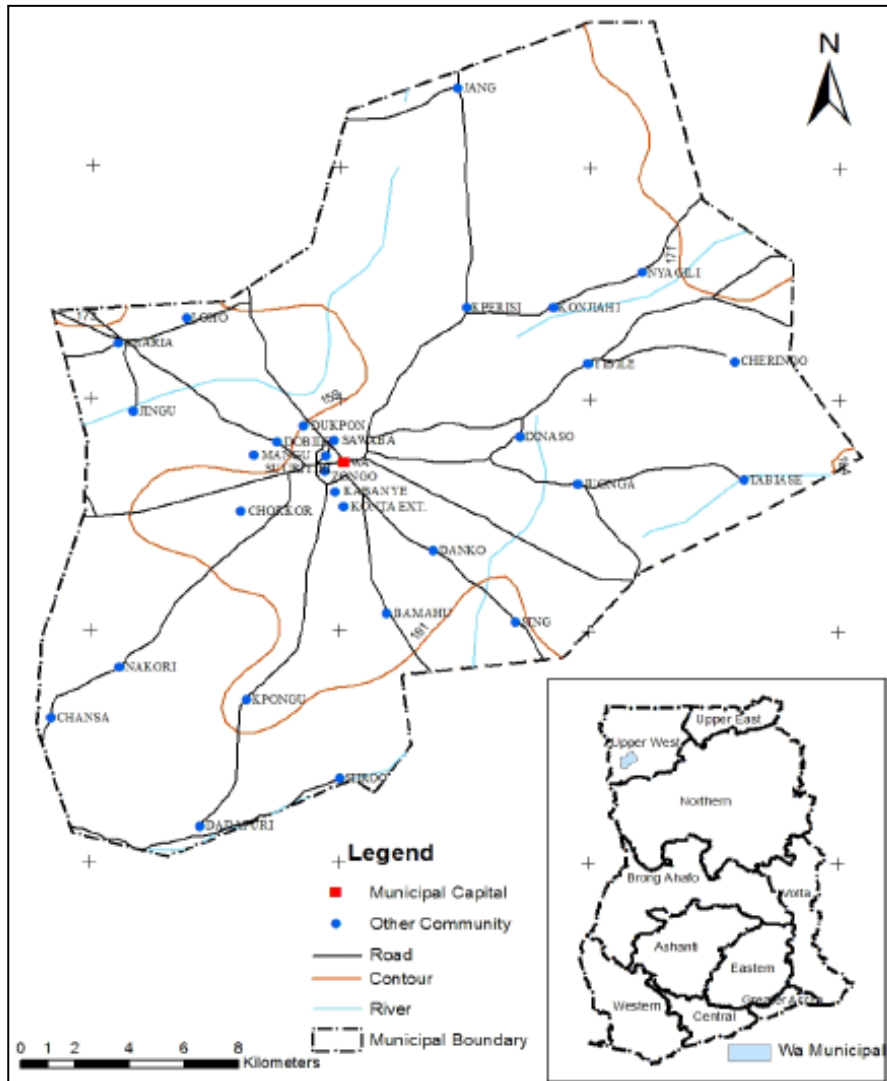


Figure 1: Map of Ghana showing location of study area (Aduah and Aabeyir, 2012)

UBIQUITY OF PLASTICS IN THE WA MUNICIPALITY

Packaging with plastics is everyday practice in the municipality. As a consequence the issue of plastic waste in the municipality is shared between empty water sachets and other plastic packaging. Random littering of plastic packing of potable water and food is common practice in the Wa municipality. Water sachets are sold to thirsty trekking people alongside streets and in public places which when emptied, disposed on the ground. Since temperatures between 27 and 30 degrees centigrade are commonly reached during daytime in the dry season of the tropical northern regions of Ghana (McSweeney, New, and Lizcano, 2008), many water sachets are sold and disposed. The 14 producers of sachet water as covered by the survey churn out a total of between 2000 and 50,400 packs of sachet water per month with an arithmetic mean of 15,213 packs per producer per month. A pack of sachet water contained 30 single pieces of 500ml of sachet water.

Similarly, cooked food that is sold alongside urban streets – but also in canteens and restaurants – is packed in plastic bags that are usually randomly discarded.

The results of this practice of using and randomly discarding plastic bags are various. Littering the environment is a nuisance that aborts the aesthetics of the landscape. See figure 2. Besides, littered plastic bags clog open drainage systems and threaten the lives of animals as they get eaten.



Figure 2: Random Disposal of Empty Water Sachets at a Public Place (Authors, 2013)

On the flip side, littering the environment also presents health implications. For example, malaria and cholera which are sanitation related diseases still persist as the commonest diseases in the study area (Wa Municipal Assembly, unpublished). The randomly discarded plastics in the municipality contribute in clogging the drainage systems, preventing the flow of water and other liquid waste. Standing water is a favourable breeding environment for mosquitoes (Morse, 1995).

Solid waste disposal is also not adequately managed in the municipality using environmentally friendly means. Roughly 60,000 mt of solid waste is produced per year – 53,724 mt in 2006, 57,278 mt in 2009 (Wa Municipal Assembly, unpublished), a share of which is collected and disposed to a non-engineered dumpsite (Wa Municipal Assembly, unpublished). During the study it was observed that not all skip containers were consistently emptied. Remaining waste is crudely dumped, burned or buried in the township.

Socio-cultural factors make it essential to view waste management as a multi-dimensional challenge and to apply integrated approaches that recognise the inclusive roles of all people connected to the lifecycle of the disposable product. This is supported by Hansen, Christopher and Verbuecheln (2002) that “focusing on disposal options, however, is not a solution to the waste problem. The production of waste is closely tied to other issues, including consumption patterns, lifestyle, jobs and income levels, as well as a host of other socio-economic and cultural factors.” Therefore, waste management is not a matter of proper municipal waste management alone; rather it does involve cultural habits of waste disposal and the generation of waste at first place. On the one hand, it is the consumers' responsibility to properly dispose empty water sachets into litterbins. Yet the survey noted that even in cases where litter bins were in close proximity to consumers, empty water sachets were still littered around. On the other hand, manufacturers of disposable products have the key capabilities to initiate and maintain sustainable waste practices through product design, take-back mechanisms among others thus minimising both negative upstream and downstream environmental footprints of their products.

THEORETICAL CONCEPTUALIZATION OF EXTENDED PRODUCER RESPONSIBILITY

Municipal solid waste management is a complex task which depends as much upon organisation and cooperation among households, communities, private enterprises and municipal authorities as it does upon the selection and application of appropriate technical solutions for waste collection, transfer, recycling and disposal (Schübeler, 1996). This makes it essential to develop waste management approaches that link not only stakeholders who have connection with the lifecycle of a project but also assigns them appropriate responsibilities. The Extended Producer Responsibility (EPR) concept is one approach that has been acknowledged to offer great possibilities of creating such linkages and assigning responsibilities to waste management.

EPR is an environmental strategy based on the polluter pays principle. It seeks to create the financial incentives for producers to implement waste reduction and recycling processes either individually or through co-operations with other producers. It is an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle (Nicol and Thompson, 2007). The Organisation for Economic Cooperation and Development (OECD) (2001) recognises two related features of EPR policy namely the shifting of responsibility (physically and/or economically; fully or partially) upstream to the producer and away from municipalities and the provision of incentives to producers to incorporate environmental considerations in the design of their products. Shifting the economic responsibility of waste management towards producers requires them to pay for any related post product consumption, disposal and recycling costs. Shifting the responsibility of physical waste management towards the producer infers both the direct and indirect handling of a disposable product, including take-back for recycling (Nicol and Thompson, 2007). This leverages local governments from the huge physical and financial burden of managing municipal waste. Hoornweg and Bhada-Tata (2012) provide evidence that managing solid waste is often the single largest budget item of local governments in developing countries.

Mandating producers to pay for the lifecycle environmental cost of their products provides economic incentives to implement green production and disposal processes. During the product development phase producers may thus be concerned with improving product design in terms of material and energy usage and pollution prevention. Other environmental considerations at product design phase include waste minimization, reuse or recyclability, material conservation, pollution reduction, lower toxicity and "eco-design" (Walls, 2006). Efforts of producers resulting from EPR can be summed up as geared towards not only reducing the waste disposal burden on the environment but also ensure that resources are efficiently utilized in satisfying human needs.

A number of policy instruments are being employed to shift responsibility for product and packaging waste from government and taxpayers to producers and consumers. Relevant to the objectives of this paper, these include *regulatory instruments* such as mandatory take-back schemes, minimum recycled content standards, materials and product bans and restrictions and *economic instruments* including advance disposal fees, virgin materials levies and deposit/refund systems.

Different policy instruments connotes that the implementation of EPR varies from country to country. Its implementation has been largely successful especially in OECD countries and within the European Union (EU) (Packaging Recovery Organisation Europe, 2011).

That notwithstanding the concept remains controversial. Whether it is environmentally effective and economically efficient is a key question and one that is hard to answer if individual manufacturers become responsible for managing the whole process of their products' waste (Hanisch, 2000). Some producers engaged in EPR usually contribute financially to the cost of product recovery and recycling to be carried out on their behalf to increase their economies of scale. A common example is the Green Dot system widely in use within the EU.

It should be mentioned here that within the concept of EPR, the onus to manage products once they become waste does not rest only with producers. Sharing responsibilities across the product chain is an inherent part of the concept (OECD, 2001). All actors including producers, consumers, distributors, disposers, importers, local governments and society at large must participate in EPR policy initiatives to optimise its effects. The call for everyone involved in the lifecycle of a product to take up responsibility to reduce the product's environmental, health and safety impacts is referred to as product stewardship in the United States of America (US Environmental Protection Agency, 2012).

THE POTENTIAL OF EPR IN THE MUNICIPALITY OF WA

Aside the production and distribution of sachet water, producers have initiated some approaches to contribute to solving the downstream environmental menace of their products. Approximately a third of producers were engaged in activities that could be regarded as extended responsibilities. See figure 3. Percentage total is more than 100% since producers engaged in multiple approaches.

Producers were observed to retrieve empty sachets either from retailers and/or by engaging the services of scavengers (waste pickers) who collect the littered sachets for the producers at a fee. Retrieved sachets were then sold usually to an entrepreneur who sent them to Accra (located some 680km south of the municipality) for recycling. Plastic scavenging is an emerging additional income stream for sachet water producers in the municipality. It is however still at its embryonic phases. The practice of retrieving empty sachets as at the time of conducting this research was however not a requirement or mandatory for producers. It emerged as an additional profit stream for manufacturers due to the emerging recycling opportunities.

It was observed however, that there existed no frameworks for waste separation – by means of waste bins or culturally. There were also no financial instruments to trigger behaviour transitions in either water sachet waste disposal or plastic waste in the municipality. This made it difficult for producers to retrieve the empty sachets. As a consequence not only were producers finding it challenging to contribute effectively to managing the aftermath of their economic activities but also the municipal assembly. The random disposal by consumers and the lack of local recycling plants render the efforts of producers largely ineffective. That notwithstanding, the survey found that despite the challenges bedeviling sachet water producers, they were interested in contributing to minimising the downstream negative effects of their products. Producers were observed to be interested recycling. This is a huge potential that can be further enhanced with the necessary instruments to optimise the benefits that accrue from it while leveraging the municipal assembly from the burden of waste management.

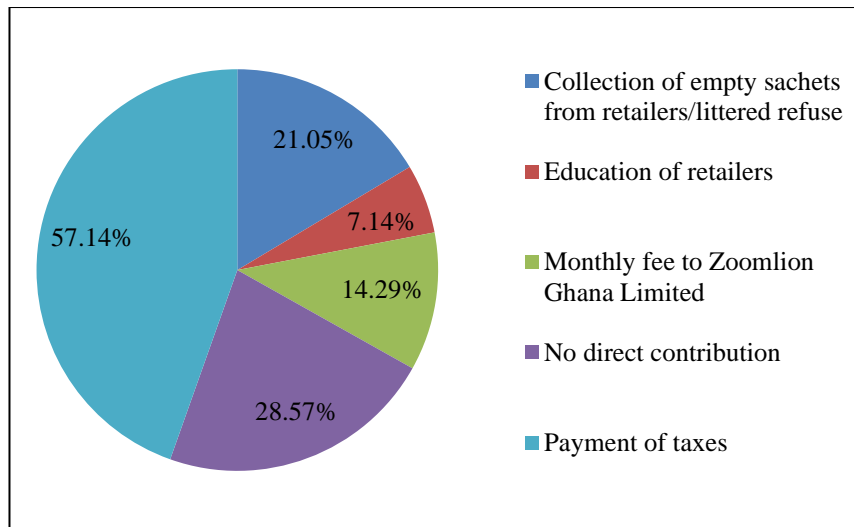


Figure 3: Producer contribution to plastic waste management (Authors, 2013)

The other approaches such as the payment of taxes and monthly fee to Zoomlion Ghana Limited (a waste management company) were found not to be extended responsibilities. None of the taxes paid by producers were peculiar to sachet water producers or directly linked with the management of plastic waste. It was also noted that pre-finished plastics for pharmaceuticals, plastics used for water sachet production as well as those used in the agricultural sector were exempted from a 15% environmental tax imposed on all other pre-finished plastics. This was reconfirmed by this study as no producer reported to have paid any such taxes. The prices at which sachet water were sold also had no component of taxes dedicated to waste management. No producer take back schemes also existed either in the Wa municipality or elsewhere in the country. The fee paid to Zoomlion Ghana Limited was to take care of internally generated waste by the respective producers.

PRODUCERS' PERSPECTIVES TO MANAGING PLASTIC WASTE

The suggestions made by producers to managing plastic waste were ranked based of frequency of a suggestion cited by producers. This means the higher the frequency of producers stating a particular approach the higher its percentage rank. These rankings are illustrated by figure 4 below. Approaches indicated by producers portray that sachet water producers view the plastic waste menace in the municipality to be closely linked with consumer behaviour. Educating the public on better handling of empty sachets was a recurring theme in approaches suggested by producers. To complement public education, producers also wanted more litter bins distributed at all vantage locations. This could be seen as a way of lessening the cost incurred by producers in retrieving empty sachets while restoring sanity to the landscape. In total 57.17% of producers made recommendations directly aimed at influencing consumer behaviour rather than technological approaches. Refer to figure 4.

This situation emphasizes that consumers are key in plastic waste management. EPR seeks to assign responsibilities among various stakeholders. Aside paying taxes which all citizens are expected to do, the survey observed that

consumers of sachet water had no roles in plastic waste management. Without governmental bodies institutionalising frameworks to influence consumer behaviour towards plastic waste, efforts by producers could prove ineffective.

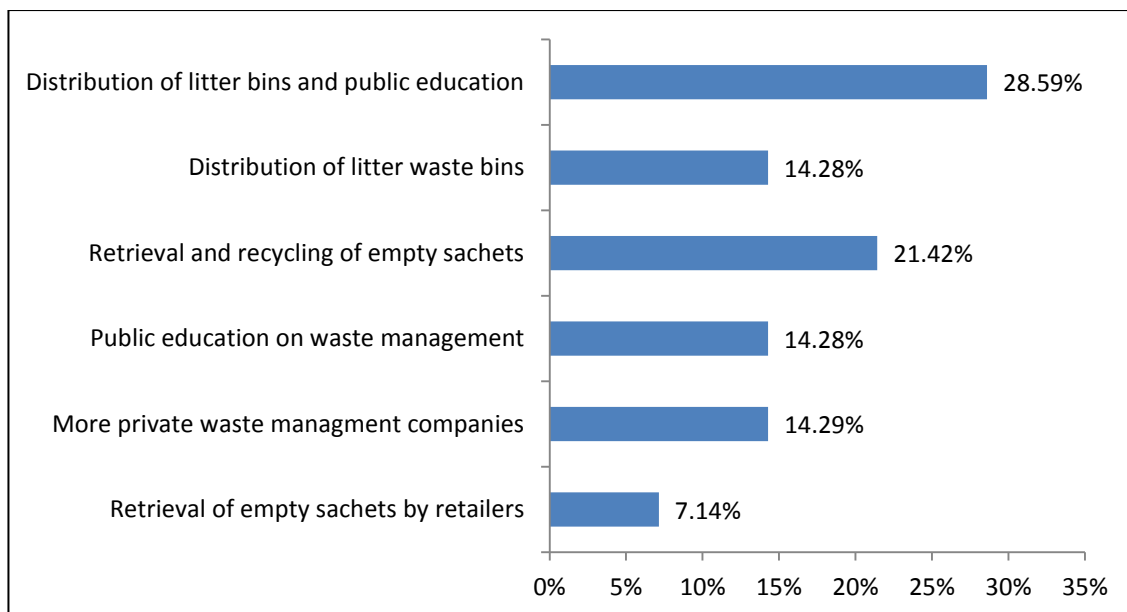


Figure 4: Suggested approaches by producers for managing empty water sachets' waste (Authors, 2013)

CONCLUSIONS

The menace caused by plastic waste requires a re-examination of current methods to its efficient management and possible new ways to enhance the effectiveness of already existing management practices. There is the need to exploit possibilities of influencing producer and consumer behaviour towards waste – educational offerings to consumers and producers and/or a support of market mechanisms to make recycling more effective. These efforts will result in reducing among others quantities of plastics being land filled and improve environmental quality. Recycled plastics could serve as inputs for further production thus minimising the need for virgin materials.

It is not economically motivating for producers to continue to collect sachets littered along streets as this increases their operational costs. Providing litterbins by producers also at vantage points to collect empty sachets could also prove economically unviable since producers were producing on a small scale basis. These are the gaps that should be filled through policy and economic instruments.

The extended producer responsibility in which ever form it is implemented could leverage the huge burden of MMDAs in the country while influencing sustainable practices among stakeholders along the sachet water value chain in the municipality. The OECD, 2001¹ points out that EPR addresses what many regard as the weakest link in the product

¹ Organization for Economic Cooperation and Development (OECD), Extended Producer Responsibility: a Guidance Manual for Governments, 15-161; page 19, OECD Publications' Service, Paris, 2001

responsibility chain; the final disposal of products after their purchase and use by consumers. This paper demonstrated that producers are willing and trying to contribute in waste management efforts. The same cannot be said about consumers who do not only have no responsibilities in plastic waste management but also weaken the efforts of producers by random littering of the empty sachets. Policies that influence consumer behaviour could prove to be effective in this regard. Roping in all stakeholders connected to the lifecycle of sachet water would lessen the burden on few duty bearers while optimising any benefits that would accrue from the implementation of EPR.

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