

Recycling Situation in South Africa: A Discussion

Edison Muzenda

Abstract—This short paper discusses the recycling situation in South Africa with particular emphasis on Gauteng province's status quo. A number of government, industry and domestic initiatives aimed at reclaiming general waste are discussed. Local government recovery initiatives include drop of centres, collection banks and buy-back centres. Industry recovery initiatives focus on the recycling of packaging material, plastics, glass, metal, paper, e – waste and waste tyre. The study objectives were achieved through literature search and analysis.

Keywords—Initiatives, general waste, recycling, recovery.

I. INTRODUCTION

WASTE management in South Africa has in the past been uncoordinated and poorly funded. Key issues include inadequate waste collection services for the greater part of the population, illegal dumping, unlicensed waste management activities, over-use of landfills, insufficient waste minimisation and recycling initiatives as well as lack of waste information and legislation enforcement [1]. In response to this, the National Waste Management Strategy (NWMS) as prescribed by the National Environmental Management Act 2008 emphasized the need for integrated waste management, which requires coordination of functions within the waste management hierarchy. The Department of Environmental Affairs is the designated lead agent for integrated waste management. In addition, the promulgated Waste Act (Act 59 of 2008) is expected to address the waste management short falls in South Africa. The diversion of waste from landfills through waste minimisation and recycling is a national policy objective.

II. GAUTENG'S STATUS QUO

There are a number of initiatives aimed at reclaiming general waste from various waste streams in Gauteng Province. These include local government, domestic as well as industry recovery and waste avoidance initiatives.

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A. Local Government Recovery Initiatives

Gauteng municipalities have been slow and reluctant to initiate waste minimisation activities due to the previously low cost of landfilling. However, more recently, the cost of general waste landfilling has increased significantly. In addition, strict regulation governing the operation of landfill sites and the unavailability of landfill space has pushed the province to consider waste recovery initiatives. Today, there are a number of general waste recovery initiatives in the province such as drop of centres, collection banks and buy-back centres.

1. Drop of centres

Recycling and garden drop-off centres are well established in Gauteng's cities and larger towns, where waste is separated into glass, paper/cardboard, cans scrap metal, plastic, garden waste and other waste types, as delivered in separate form by members of the public. Separation of waste at drop-off centres may be poor, hampering cost-effective recycling.

In early 2000, the City of Tshwane initiated a project involving scavengers and landfill operators. The municipality trained over 1000 scavengers at its landfill sites. This led to the creation of the Tshwane Recycling Corporative where all the reclaimers became members. To support this venture, the Department of Environmental Affairs and Tourism (DEAT) assisted the municipality to build drop-off centres at two of its landfill sites, Hatherly and Kwaggarsrand. The project did not succeed to expectations due to conflict among various reclaimer groups. Electronic waste (e-waste) has increased considerably in households, commerce and business as a result of replacement and the emergence of new technologies. PIKITUP initiated drop off facilities around the City of Johannesburg where residents are encouraged to dispose their broken and unwanted gadgets like mobile phones, computers microwaves and other electronic appliances.

2. Collection banks

A joint initiative between PIKITUP and Mama-She waste Recyclers was initiated in early 2000. This pilot project is operated in conjunction with the community of Lonehill, Sandton. Mondi Paper and Nampak Packaging are offering assistance to this venture [2].

3. Buy-back centres

Waste with an economic value is bought from the

community at buy-back centres and traded at a profit. This creates employment as well as entrepreneurial opportunities. Buy-back centres are privately operated with the support of PIKITUP. This ensures relatively clean recyclable materials as waste is collected and sorted at source.

B. Industry Recovery Initiatives

1. Packaging Industry

The packaging industry has established a *Recovery Action Group (RAG)*, a division of the Packaging Council of South Africa (PACSA), formed in 2006 by various associations, namely (i) Collect a Can (ii) The Glass Recycling Company of South Africa (iii) Packaging Council of South Africa (PACSA) (iv) Paper Recycling Association of South Africa (v) PET Recycling Company (PETCO) (vi) Plastic South Africa and (vii) Polystyrene Packaging Council. These organisations represent the metal, plastics, glass as well as paper packaging materials. RAG ensures effective communication between industry and all levels of government. Packaging is estimated to contribute 12% of household waste stream in South Africa.

2. Plastics

In most developing countries, plastic consumption has grown at a tremendous rate over the past two decades. In industries such as retail there is a growing move towards reuse and reprocessing of plastics for economic and environmental reasons. Not only is plastic made from a non-renewable resource, but it is generally non-biodegradable (or the biodegradation process is very slow). Not all plastics are recyclable. Polyethylene (PE), Polypropylene (PP), Polystyrene (PS) and Polyvinyl chloride (PVC) are recyclable. A drawback in the recycling of plastics is that they are often manufactured from more than one polymer. In addition some fibres may be added to the plastic to give it strength and this makes recovery challenging.

Plastics SA is an umbrella organisation for the plastics industry in SA and was founded in 1975. One of its basic function is to deal with environmental issues for example one of its entity Environmark which was formed in 2007 [3]. Environmark's principal activities are education, awareness and clean up campaigns and the provision of drop off facilities [4]. The recycling of plastics is a fairly well established as recycled plastics are gaining a reputation for being strong, durable and versatile. The industry is negatively affected by price instabilities [5] for both virgin and recycled materials. About 77% of the plastics recycled in South Africa originate from packaging. Table III shows a gradual increase in plastic recycling in South Africa. This can be attributed to the growth in recycling awareness and education.

TABLE III
RECYCLING SURVEY [4]

	2009	2010	2011
Total tons converted	1 280 000	1 313 000	1 300 000
Total tons recycled	228 057	241 853	245 000
Recycling rate	17.80%	18.40%	18.90%

3. Glass

Glass recycling has been increasing, Fig 1, The Glass Recycling Company (TGRC). TGRC has partnered with national government, glass manufactures, fillers and recyclers in its effort to substantially increase the current recycling rates from a mere 18% to 40%. The Glass Recycling Company (TGRC), formed in July 2006, is South Africa's official organisation for promoting glass recycling. It is a non-profit organisation and is mandated to keep glass alive by promoting recovering, recycling and reusing. The company's shareholders include: Consol, Nampak, South African Breweries, Distel, Brandhouse, Tiger Brands, Nestle, KWV, Appletizer, DBG, Ceres, Edward Snell & Company, Coca Cola and Peninsula Beverage.

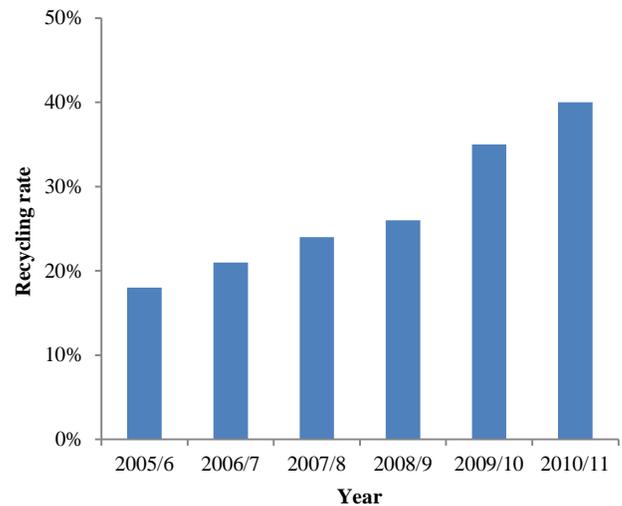


Fig. 1 The Glass Recycling Company recycling rates

4. Metal

The major tin recovery group in South Africa is Collect-a-Can, established in 1976 as a joint venture among Iscor, Metal Box and Crown Cork. Collect-a-Can is a non-profit organisation with the objective of purging end-use metal waste. To ensure the success of the recovery of cans, Collect-a-Can subsidises the collection system. The steel beverage can has become one of the most popular and versatile packaging formats in Southern Africa, with over 3 billion cans being consumed annually [3].

Collect-a-Can has environmental responsibility partnerships with various stakeholders such as South Africa's Department of Environment, local government municipalities, the recycling industry, manufacturers, fillers and distributors of tin packaged products within the can packaging value chain. Corporate social investment projects include initiatives such as environmental education and awareness programs, enterprise development support, job creation and poverty alleviation to promote environmental responsibility amongst the citizens of South Africa. The recovery of metal is well established with

major successes in the recycling of tin cans and scrap steel with price stability. This can be attributed to the fact Collect-a-Can is a non-profit organization set up by can manufacturers; hence an efficient and well controlled collection network exists.

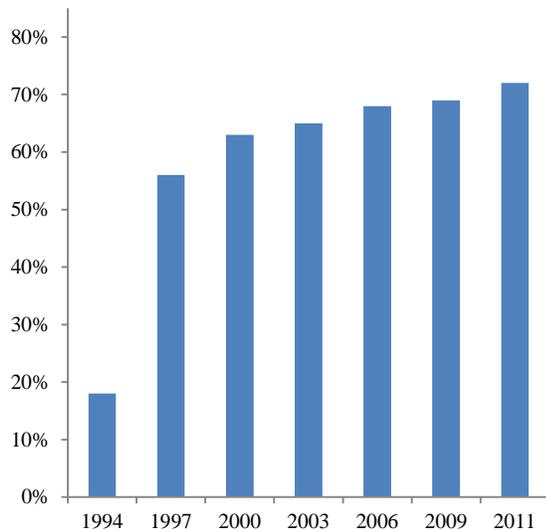


Fig. 2 Collect-a-Can recycling rates

5. Paper

Paper Recycling Association of South Africa (PRASA) formed in 2003 recover over one million tons of paper every year contributing towards the protection and preservation of the environment. Less energy is required to make products from recycled materials compared to virgin materials. Production of recycled paper uses 80% less water, 65% less energy, and produces 95% less air pollution compared to virgin paper production [6]. Energy saving through recycling is a significant environmental benefit. The paper and fibre recycling industry is well developed in Southern Africa, with three major players namely: South African Pulp and Paper Industry (Sappi), Mondi and Nampak, these are PRASA members. Challenges faced by the paper recycling industry include separation at source for cleaner materials as well as price and supply fluctuation.

6. e-Waste

e-Waste is challenge is it contains a variety of materials including hazardous substances. Incorrect disposal of electronic waste can result in hazardous chemicals entering the environment for example the water systems. The e-waste Association of South Africa (e-WASA) manages e – waste in the country. Refurbishing, reusing, and extending the lifecycle of electronic products is an important approach to reduce electronic waste and the hazards associated with it. Despite the growing concern, most countries in Africa have yet to develop practical solutions to e-waste management and recognize it as a hazardous waste stream.

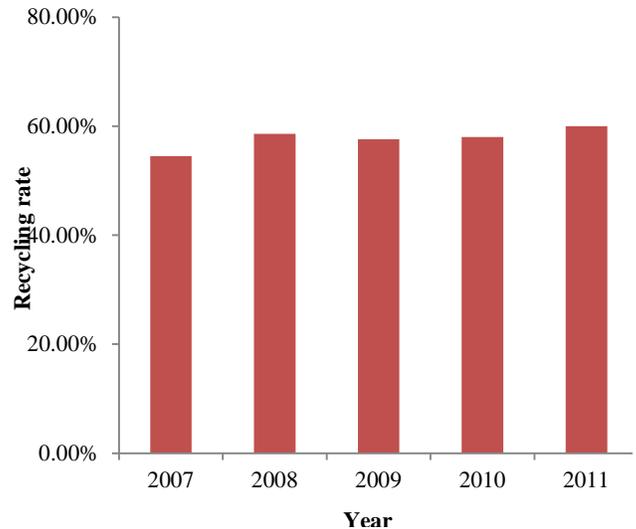


Fig. 3 PRASA recycling rates

III. WASTE TYRE

A. Introduction

An infant waste tyre recycling industry exists in South Africa. The industry is involved in the shredding, granulation and pulverising of waste tyres. South Africa is searching for tyre processing technology that can deliver jobs as well as economic and environmental benefits. Some of the waste tyre management initiatives are described below.

B. Vredestein SA Recycling

The East Rand-based Vredestein SA Recycling Company, formed in the 1950s dealt with a variety of environmental and health-related challenges associated with waste tyres before the plant burnt down in 2008. More than two-million passenger-car and truck tyres were recycled into rubber granulate and reclaimed rubber each year [6]. Vredestein SA Recycling Company manufactured rib chips from scrap tyres used for artificial sports fields.

C. Innovative Recycling (PTY) LTD

Innovative Recycling operates waste rubber and plastic conversion to fuel plants in South Africa with the main products being steel wire, oil fuel and carbon black. Unfortunately due to lack of environmental regulation adherence, the operation was shut down.

D. South African Tyre Recyclers

SA Tyre Recyclers formed in 2005 in Atlantis, Cape Town operates the most modern tyre recycling facility in South Africa. SA Tyre Recyclers works closely with local authorities and government bodies in addressing recycling and environmental issues regarding post-consumer tyres. The SA Tyre Recyclers plant processes about 1 million tyres of mixed sizes [7]. Scrap tyres are processed into shreds, granules, chips, crumbs and powders.

E. South African Recycling Company (SATRP)

This was formed in response to the Department of Environmental Affairs (DEA) policies towards producer responsibilities as per the Waste Tyre Regulation, 2009. The SATRP Industry Plan provides for the collection and disposal of waste tyres originating from the SATRP Industry Plan subscribers.

F. REDISA

The REDISA Plan critically analysed [8] attempts to address the waste tyre challenge inclusively. One key objective of the REDISA plan is to find a profitable and ecologically friendly waste tyre management solution. The Recycling and Economic Development Initiative of South Africa (REDISA plan) has been accepted in accordance with the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) as stated in the Government Gazette, 17 April 2012, No.35147.

IV. RECYCLING OPPORTUNITIES

Recycling offers opportunities for job creation, economic development and cleaner environments. The processing of recyclables is a labour intensive exercise and creates more jobs requiring various skills and education than waste collection and disposal. Recycling jobs are very stable and fast growing as waste will be continuously be generated and also increase with population growth. Recycling can also be very attractive and lucrative industry because rare and expensive materials can be recovered.

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