LOOK ACADEMIC PUBLISHERS
OPEN ACCESS

INTERNATIONAL JOURNAL OF ENVIRONMENTAL & SCIENCE EDUCATION
2017, VOL. 12, NO.8,1751-1764

# Assessing People's Behavior towards Recycling, a Case of Upper Claremont South Africa

R O Anyasi[a] and H I Atagana[b]

[a]University of South Africa, SOUTH AFRİCA.

**ABSTRACT**

This paper aimed to survey the behaviour of households towards recycling as a sustainable means of waste management. This is to establish the impact of such behaviour in limiting the success of recycling practise. 400 randomly selected households in the suburb of Upper Claremont in the city of Cape Town, South Africa, were used in the study. Data was collected using a structured questionnaire targeted at the head or breadwinner of each household in the area. Analysis of the results showed that 67.3 % of the sampled households do not recycle waste, meaning that much efforts should be geared towards awareness creation for people to understand the benefits. There was lack of basic recycling education and guidance and inadequacy in infrastructure and services and it negatively deters the interest for recycling. Pearson correlation analysis showed a significant and positive relationship ($r = 0.89$, $p = 0.003$) (significant level at $p < 0.05$) between waste management concerns and the responsibility taken by the households in their individual recycling ability. SWOT analysis conducted indicated an increase in environmental awareness as the strength, insufficiently developed recycling collection infrastructure as the weakness, development of convenient recycling collection infrastructures and incentives like tax reduction as opportunities, while the threats has to do with the fact that recycling may not become financially rewarding on the short run. It was recommended that government should do more installing more convenient recycling depots in Upper Claremont area, as well as raising environmental awareness campaigns.

**KEYWORDS**
Recycling survey, Household Waste management, Upper Claremont, Peoples behaviour, SWOT analysis

**ARTICLE HISTORY**
Received 15 January 2017
Revised 29 March 2017
Accepted 4 April 2017

## Introduction

Solid waste generation is one of the most critical issues effecting the environment today. The rate of urbanisation along with a higher income level has been directly linked to an increase in waste generation in households (Akil and Ho 2015). Recycling is the best way to address the waste issues as it slows down the generation of waste which ultimately is deposited into landfills around the globe. Recycling ensures a cleaner environment with less pollution, helping

**CORRESPONDENCE** R. O. Anyasi ghnlwl@yahoo.com

to sustain the environment for future generations and reduce greenhouse gas emissions. Recycling also conserves the environment by saving energy, preserving resources, protecting wildlife and saving millions of trees (US EPA 2016, Robinson and Read 2005).

Table 1: List of materials being recycled in South Africa (By Plastic SA)

| Material | Packaging | | Non-packaging | |
|---|---|---|---|---|
| | Material identification code | Product examples | Material identification code | Product examples |
| PET<br>Poly(ethylene terephthalate) | 1 PET | Carbonated drink bottles, mineral water bottles, clear bottles, tubs, etc. | >PET< | Carpeting, fibres for apparel and industrial applications. |
| PE-HD<br>High density polyethylene | 2 HDPE | Milk bottles, fruit juice bottles, chemical drums, packaging films, tubs, closures, cosmetic bottles, domestic cleaning agent bottles, crates, pallets, bins, etc. | >PE-HD< | Irrigation pipes, shade-cloth, netting, shopping trolleys, refuse bins, shopping baskets. |
| PVC-P<br>Flexible Poly(vinyl chloride) | 3 PVC | Pouches, cap liners. | >PVC-P< | Cable insulation, gum boots, shoe soles, flooring, matting, medical cloth and tubing (un-used!), tarpaulins, hoses, safety gloves, soft toys, rain wear, etc. |
| PVC-U<br>Rigid Poly(vinyl chloride) | 3 PVC | Clear bottles, jars, blister packaging, food packaging, inserts like chocolate trays.<br>(Only clean waste that does not require washing!) | >PVC-U< | Pipes, conduit, profiles, cladding, stationery foils, plumbing, skirting, cornices, trunking, cooling tower packing, etc.<br>(Only clean waste that does not require washing!) |
| PE-LD and PE-LLD<br>Low and Linear low density polyethylene | 4 LDPE | Packaging films, stretch wrap, shrink wrap, bags, shrouds, dust covers, peel-able lids, cosmetic tubes, boutique shopping bags, bubble wrap, foam sheeting, bread bags, etc. | >PE-LD< | Irrigation pipes, cable insulation, agricultural films, rotational moulded products, e.g. tanks and corner protectors, etc. |
| PP<br>Polypropylene | 5 PP | Yoghurt tubs, margarine tubs, ice cream containers, wrappers, packaging films, bottles, caps and closures, canisters, strapping tape, woven bags, crates, etc. | >PP< | Coat hangers, battery cases, reels, automotive components incl. bumpers, furniture, bowls, buckets, carpeting, non-wovens, bristles, hair extensions, appliances, like toasters and kettles. Toilet seats, ropes, fishing nets |
| PS and PS-HI<br>Polystyrene (general purpose and high impact) | 6 PS | Yoghurt tubs, display boxes, CD covers; | >PS< | Coat hangers, take-away cutlery, take-away crockery, toys, cups, plates, audio and video cassette housings, housings, cell phone covers, stationery items, etc. |
| PS-E<br>Expanded Polystyrene | 6 PS | Protective packaging, take-away food containers, clamshell packaging<br>(Only clean waste that does not require washing!) | >PS-E< | Vending cups, insulation panels, suspended ceiling panels, skirting and cornices.<br>(Only clean waste that does not require washing!) |
| ABS<br>Acrylonitrile Butadiene Styrene | 7 ABS | Tubs, portion packs for margarine and jam. | >ABS< | Cones, reels, bobbins, TV and other housings, toys, automotive components, telephone casings, signage, bath tubs, tap handles. |
| PA<br>Polyamide or nylon | 7 PA | Flexible films, ovenable bags. | >PA<<br>>PA GF15< | Automotive components, fishing gut, cable ties |
| PC<br>Polycarbonate | | | >PC< | Lighting, lenses, automotive components, CD's, DVD's, water fountain bottles. |
| PMMA<br>Poly(methyl methacrylate) or acrylics | | | >PMMA< | Signage, display lighting, light covers, lenses, number plates, reflectors. |
| POM<br>Polyoxymethylene or acetal | | | >POM< | Stationery components, automotive components, curtain accessories. |
| TPU<br>Polyurethane | | | >TPU< | Footwear, hoses, mining screens, automotive components. |

The act of recycling is a process whereby wastes are collected and processed into new products instead of disposing them. Recyclable materials include plastic, glass, paper, metals (aluminium), electronics etc. as can be found in Table 1 (US EPA 2016). Recycling does not only benefit the environment, but the community as well by providing employment opportunities; in a country such as South Africa with an unemployment rate of 23.9% this is an important benefit (Statistics South Africa 2011). One such example is the NPO Oasis association in Lansdowne, Cape Town, which employs disabled community members to work in their recycling workshops. People can either support the organisation by making use of their recycling collection service or by taking household recycling to their workshop (Oasis Association, 2016).

According to the City of Cape Town's Waste Review (2016), Cape Town's landfills are running dangerously short of space. Frightening statistics were revealed from the results of two surveys conducted in 2010 by the Council for Scientific and Industrial Research (CSIR); only 3.3% of South Africa's urban population recycles household waste (Oelofse, 2010). The same study concluded that out of approximately 19 million tons of municipal waste generated, about 25% were mainline recyclables such as paper, glass, plastic and tins. Two-thirds of the more than 2000 urban South African households surveyed do not know where to dispose of household recyclables, and the majority of participants do not know how to recycle or what can/can't be recycled (Latif et al, 2012).

Past literatures reported that there was an overall negative attitude towards recycling. Reasons for not recycling were identified and these reasons included; lack of time, lack of interest, lack of space, people lacking the knowledge of what is/is not recyclable, as well as the lack of convenient recycling depots (Bao 2011, Adomavičiūtė et al, 2012). It was discovered that South Africans would possibly begin to recycle if they understood what it meant and if it was made to be more convenient (Kim and Choi 2005). Solid waste management is one of the most critical environmental problems facing our planet today and leads to environmental hazards such as infectious disease, environmental degradation, water and soil pollution, greenhouse gas emissions and negative impacts on the quality of human life (Pakpour et al, 2014). Developing countries such as South Africa are worse affected by these issues. This problem highlights the urgency for responsible waste management at grass roots level starting at the home (Akil and Ho 2015). It is essential that every household is able to manage their own waste in the most environmentally sustainable way possible which includes making recycling practices part of the everyday household routine.

Mtutu and Thondhlana (2015), reported that one of the root causes for environmental challenges such as global warming and water shortages, are deep-rooted in human practices and especially in human behavioural patterns. It is therefore necessary to discover why exactly households do not recycle and what can be done to improve statistics and encourage households to responsibly manage waste. The 2014 Waste amendment Act of South Africa identified the waste sector as having significant potential for job creation and contributing to the macro economy of South Africa and other countries in the region. But this will be far-fetched when one of the important sectors of waste management is not optimized as a result of the minimal information available to people on recycling.

There have been numerous studies conducted around the world concerning household recycling behaviour aimed at using the information to improve and encourage pro-recycling behaviour; each study is specific to a geographical area with various demographic and socio economic factors (Akil & Ho 2015, Fiorillo 2013, Tabernero et al, 2015). In South Africa however, most studies on the behaviour of people towards recycling has only addressed individuals in establishments (Mtutu and Thondhlana 2015). There has not been any study that identifies collective behaviour of households in the community, hence the intention of this so as provide strategies for appropriate waste management improvement. The aim of the study therefore is to identify these recycling behaviours of households in Upper Claremont, Cape Town, so as to be able to suggest on ways of improving household waste management.

## Methodology

The study was conducted in the suburb Upper Claremont, Cape Town, Western Cape Province. Upper Claremont is comprised of residential property only and forms part of the greater suburb of Claremont. According to the City of Cape Town census (2011), Claremont has a population of 17 198, and 95% of the labour force (age 15-64) is employed. 89% of those aged 20 years and older have completed Grade 12 or higher and 99.5% of households live in formal dwellings (City of Cape Town, 2013). The geographic area of Upper Claremont is governed by the City of Cape Town Metropolitan Municipality and the centre of Upper Claremont's geographical coordinates is 33.987765 S, 18.455907 E, with the total surface area of 827, 600.64 m² (Google Maps 2016).

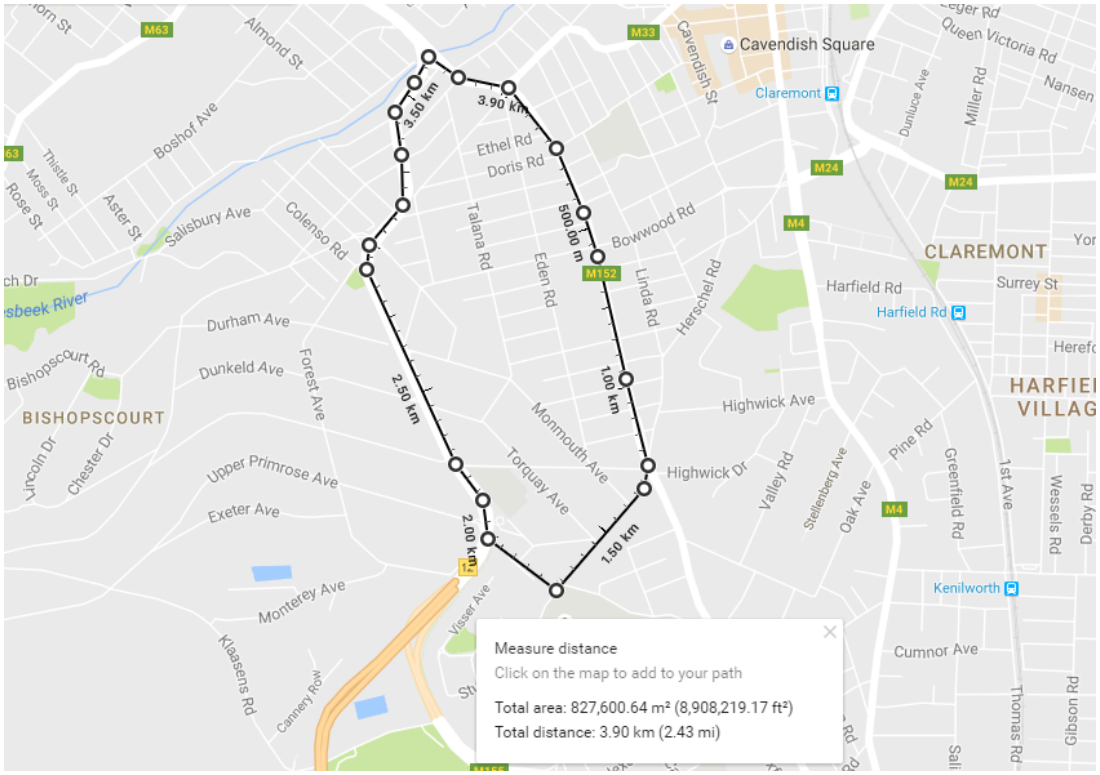

Figure 1: Map of study area in Upper Claremont, Cape Town (Google Maps 2016)

### Research design

A quantitative research design by the means of a questionnaire/survey was employed

Calculation of sample size

The area of Upper Claremont has a population of 2866 inhabitants and on average 3 people live in each household. The sample size of a population of 2866 equals 496 people calculated by a sample calculator (Creative Research Systems 2012). Considering that the average household size is 3 it is calculated that any number from 165 questionnaires will need to be distributed in order to reflect a true understanding of this populations recycling behaviour so as to generalize.

Calculation: 496 / 3 = 165 (Eqn. 1)

### Questionnaire design

The survey was conducted between April and September 2016. The questionnaire consisted of 17 questions partitioned into 6 sections. The questions incorporated both predefined and open designs considering basic information about a respondent (including age, gender, level of education, employment status, and household composition), attitude towards recycling, material being recycled, Reason for not recycling, and impacts of the municipality. From the results of the survey, strengths, weaknesses, opportunities and threats (SWOT) of waste recycling amongst households of the suburb were evaluated.

## Results and Discussion

Of nearly 600 houses approached for this study, 100 households declined, but 500 questionnaires were distributed and eventually 400 were answered and returned indicating about 80%. Households which refused to partake in the study had either said that they were too busy to answer, the owners of the household were not home, or were simply not interest in responding once hearing that it was a questionnaire to assess recycling behaviour. This from the beginning of the study gave a view of how people are disinterested in matters regarding recycling.

The first question of the survey asked participants out rightly if their households recycled all, if not some, of their wastes. It was discovered that 67.3 % of households do not recycle any of their household wastes, highlighting the need for recommendations to be made to increase recycling behaviour in the Upper Claremont area.

67.9 % of the total respondents were females, and 27.3 % were housewives. This statistic immediately indicates how many women in this area are stay at home wives and have a great influence on whether the household will/will not recycle. The majority of respondents were over the age of 46 years old with 40 % being between the ages of 46 and 60, and 38.2 % being over 65 years old. Recycling behaviour increased with an increase in age; with respondents over the age of 65 and retired being more likely to recycle. This could either be

because of an increase in the amount of time available or an increase in desire to conserve the environment for future generations. There does not seem to be a link between educational level and recycling behaviour as many respondents with post graduate degrees do not recycle.

There is a very low unemployment rate in Upper Claremont with only 2.4 % people indicating that they are unemployed. 42.8 % of respondents indicated that they were employed, 27.3 % said that they were house wives and 28.5 % were retired. The majority of respondents (75.8 %) are married as well as 66.1 % of households having children. This indicates that many households in Upper Claremont are families.

Considering that children live in 66.1 % of houses in Upper Claremont this highlights a great opportunity for recycling knowledge to be taught in schools. Children can influence household recycling behaviour by learning the importance of recycling at school as well as basic recycling knowledge which they can teach their parents and practice at home. If information about recycling cannot be included in the school curriculum then a recycling club could be a powerful tool in promoting positive recycling behaviour. A fun way to get children to recycle is by hosting a recycling competition between local schools where the school who collects the most recyclables wins a prize.

The following table represents all the demographic information captured from questionnaires as well as the percentage of the 400 questionnaires distributed.

Table 2: Demographic characteristics of questionnaire respondents

| Variables | N = 400 |
|---|---|
| Gender | |
| Male | 128 (32.1%) |
| Female | 272 (67.9%) |
| Age | |
| 18-30 | 22 (5.5%) |
| 31-45 | 66 (16.4%) |
| 46-60 | 160 (40%) |
| 60+ | 152 (38.1%) |
| Highest level of education | |
| High School | 189 (47.3%) |
| Under Graduate degree | 133 (33.3%) |

| | |
|---|---|
| Post Graduate | 78 (19.4%) |
| Employment status | |
| Unemployed | 10 (2.4%) |
| Employed | 171 (42.8%) |
| House wife | 105 (26.3%) |
| Retired | 114 (28.5%) |
| Household composition | |
| Single | 39 (9.7%) |
| Married | 303 (75.8%) |
| Widow/Widower | 58 (14.5%) |
| Children in household | |
| Yes | 264 (66.1%) |
| No | 136 (33.9%) |

There was a strong correlation between environmental concern and a sense of personal responsibility with household recycling behaviour. A total of 55.2% of non-recyclers disagreed or strongly disagreed that if their single household recycled its waste, that this would not make a difference to a global waste production issue. This indicates a serious lack of awareness to environmental issues as well as ignorance. Out of the respondents who do recycle their waste, 100% of them felt that they have a personal responsibility to sustain our natural environment, as well as 93.4% of recyclers felt that every household should recycle. This indicates that a sense of personal responsibility is an important factor in recycling behaviour. This finding suggests that strategies which promote a sense of personal responsibility and moral obligation would be powerful in changing people's perceptions on how they can be making a difference to the environment.

According to Bortoleto at al. (2012), one reason for the steady increase in waste generation globally is due to the lack of participation by individuals in household waste reduction behaviours. If everyone should continue to embrace the attitude of "An individual won't make a difference globally" then tackling a global waste issues will be impossible. This calls for a change in people's perception which can be realised by educating people about the importance of recycling and how each household will indeed make a difference to such a global issue. The result of this study is not in agreement with the postulates of Kim and Choi (2005) that reported the relationship between collectiveness and pro-environmental choices.

A very low number (33.7 %) of respondents who indicated that they do recycle some, if not all of their household waste were asked which materials they recycle. From the results, the most popular material to recycle is plastic, and the least popular materials are electronics (e-waste). The following graph portrays which materials are mostly recycled in the household.

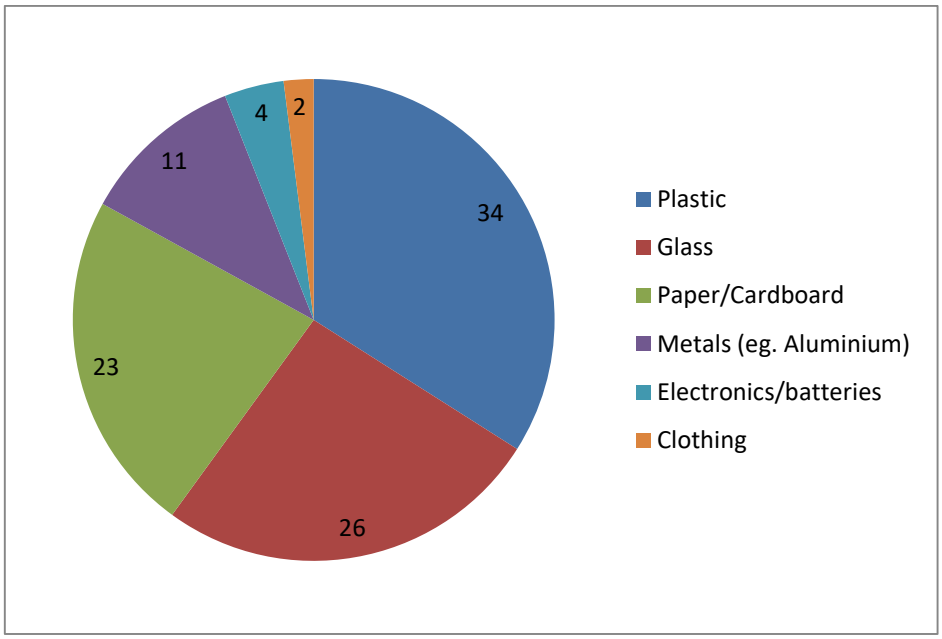


**Figure 2:** Pie graph representing types of materials recycled by households of Upper Claremont, Cape Town.

It was important to assess how these recyclers dispose of their recycling in an area that lack a convenient pick up service provided for by the municipality. Most of the respondents chose to recycle even in the face of inconvenience and time constraint. 21.8 % of recyclers make use of a private recycling collection service, 44.8% drop off their recycling at a recycling depot such as San Souci High School, 29.1% support the Oasis recycling association by either having their recyclables collected by them or by dropping off recycling at the association depot in the neighbouring suburb of Lansdowne, and 4.1% indicated that they use 'other' disposal methods.

Out of the 67.3 % of respondents who indicated that they do not recycle, 47.3% of them felt that they want to recycle, but that limiting factors are prohibiting them from doing so such as the constraints of time, space, recycling knowledge, and convenient recycling disposal services. This indicates that a number of households would indeed recycle if it was made to be more convenient for them. The study of Robinson and Read (2005) indicated that time and space unavailability as well as disinterest to recycling all leads to poor recycling habits. The majority of non-recyclers identified that all of these factors hinder their ability to recycle. The most influential factor is that recycling is an inconvenience due to a lack of convenient recycling services, as well as a lack of basic recycling knowledge. Lack of recycling knowledge greatly hinders recycling efforts. Households need to be educated on the benefits of recycling to the

environment, what materials are/are not recyclable, how to separate recycling, etc. if we are to improve recycling behaviour. This result is in agreement with the work of Pakpour et al. (2013), which reported on the negative impact of some of the limiting factors on waste management.

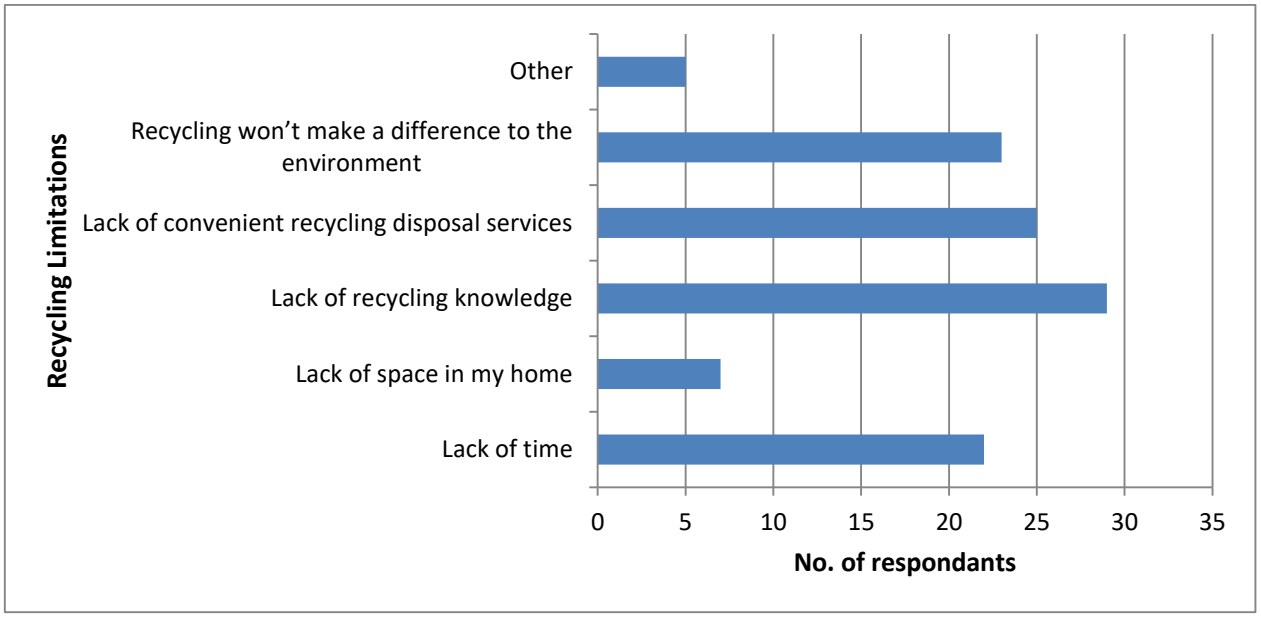


**Figure 3:** Bar graph representing the various limitations to recycling being experienced by non-recyclers of Upper Claremont.

A municipal led recycling collection service would make recycling more convenient for households. A lack of convenient recycling services was a major limitation in why households do not recycle. It was assessed whether participants would support a municipal led recycling collection service. Both recyclers and non-recyclers responded to the question; a total of 74.5% felt that they would support a recycling collection service and 25.5% indicated that they are not interested. A lack of interest could pertain to a lack of education where people do not understand the importance of recycling and how one household can make a difference (Mutang and Haron 2012). The vast majority of respondents who indicated that they were not interested in a recycling service were current non recyclers. Read (2001), highlighted on the need for government participation in creating awareness on the people on the need for recycling of waste.

## *Correlation matrix*

The relationship that existed between household's interest in waste management and the individual recycling ability was examined using correlation analysis. According to the Pearson correlation, a significant and positive relations ($r = 0.89$, $p = 0.0001$) (significant level at $p < 0.05$) between the household's interest in waste management and the individual recycling ability. The reason behind this might be that the increase household's interest in waste management also increases the individual recycling ability.

In the linear regression between household's interest in waste management and the individual recycling ability indicated a linear model as described below:

$$Y = 2.3783x + 0.9193 \quad \text{(Eqn. 1)}$$

Where Y is the individual recycling ability and X is the household's interest in waste management (Figure 4).

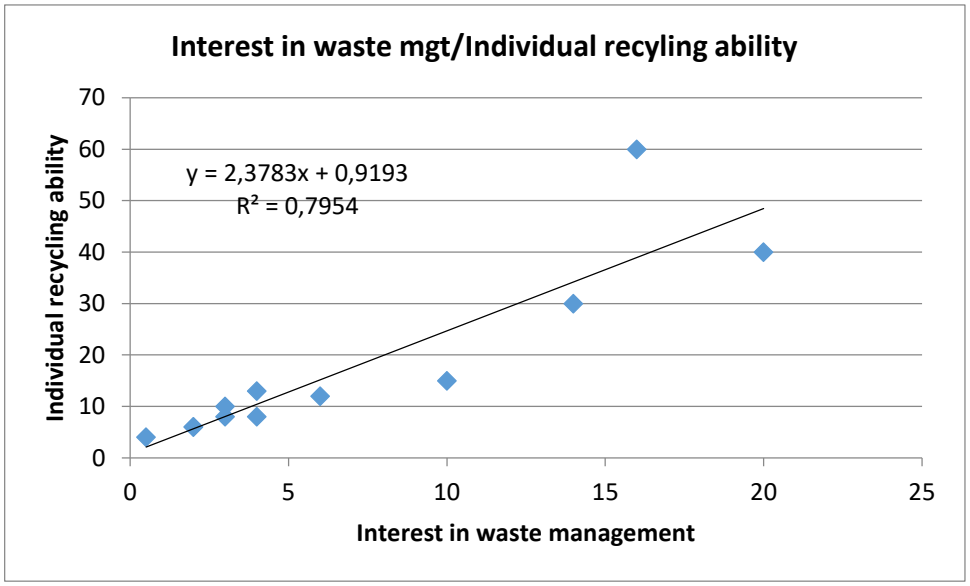


**Figure 4:** Linear regression between the household's interest in waste management and the individual recycling ability

## *SWOT Analysis of household recycling*

**Strengths**: Increase in environmental awareness: most of the respondents noted that waste should be recycled and that the municipality has to develop effective recycling points; habits that are transmitted to family members are under-utilized as well as growth in environmental values (strive to manage waste).

**Weaknesses**: Lack of conditions (no accessible recycling points closer to the people, insufficiently developed recycling collection infrastructure); mistrust in the recycling system, its benefits and effectiveness (belief that waste recycled by an individual or household will not make a difference in the global waste generation); lack of information about benefits and importance of recycling and general waste management.

**Opportunities**: Development of a convenient recycling collection infrastructure; introduction of economic incentives (lower taxes for those who recycle); further awareness rise.

**Threats**: A developed infrastructure will not satisfy real needs; recycling may not become financially rewarding immediately; improper decisions about the waste management system and waste treatment practices from the

government, when people do not see any real benefit of recycling; it will then discourage people from recycling.

Out of the 74.5 % of participants who are interested in a recycling service, 65.5 % of them are prepared to pay a minimal fee for the service. All but 10 % of the respondents agreed for a recycling fee to be included in municipal rates and taxes. It is evident here that many households in Upper Claremont would be willing to change their recycling behaviour if convenient services were provided for by the Municipality (Read 2001). About 12 % of the respondents amongst those that do recycle consented to the establishment of recycling depot in Upper Claremont, as well as indicating a need for basic recycling education. This is an indication that only those that recycle that do want to recycle more, but less on those that do not (Tabernero et al, 2015).

## Conclusion

There have been a number of limitations and boundaries identified by this study which effect household behaviour in Upper Claremont. With a growing global waste issue, landfills running out of space in Cape Town as well as present findings indicating that only 33 % of households in Upper Claremont recycle household waste it is therefore recommended that the local municipality implement a recycling scheme to encourage pro-recycling behaviour. The recycling scheme should focus on tackling two major limitations which a majority of households in Upper Claremont currently face; a lack of education and guidance, as well as a lack of recycling infrastructure and services.

It was found that environmental awareness as well as attitude towards recycling largely predicted household recycling behaviour. Participants who felt a sense of responsibility towards conserving the environment were most likely to recycle. This call for a perception change where non recyclers need to be made aware that there is a link between recycling household waste and a global issue such as climate change. Residents of Upper Claremont need to be educated with basic recycling knowledge including; how household waste is sent to a landfill, how the environment is effected if we do not recycle, what can/cannot be recycled, and how each household can make a difference to conserving the environment.

Considering that children form a greater part of households in Upper Claremont with about 66.1 %, local schools are therefore a great platform for recycling education. Thus it is recommended that recycling education be taught in local schools around Upper Claremont by including recycling education as part of their curriculum or as an after school recycling club. Schools can encourage recycling by introducing a recycling day or recycling competitions. Children are an effective change tool as they can bring their enthusiasm home and teach their parents the importance of recycling (Oskamp 2002).

In order to educate households there are various ways in which the Municipality can engage with the community, by carrying recycling campaigns within the community where new collection services and points will be canvassed for the members of that community. Residents who wish to participate should be sent a recycling information toolkit to guide and encourage the household to begin recycling. Advertisements of the recycling campaign can be presented around the neighbourhood. Interested members on the local

community as well as representatives of the municipality can go door to door and engage with residents and present them with the action plan to improve household recycling behaviour (Fiorillo 2013).

By providing households with a recycling service, would make the act of recycling less of an inconvenience as people would not have to go far from their neighbourhood to dispose off recyclable goods. With 42.8 % of respondents being employed as well as 27.3 % being housewives in an affluent residential suburb, households can afford to pay a minimal fee for a municipal led recycling service. Considering that 74.5 % of participants indicated that they were interested in a recycling collection service, the municipality can use the findings of this study to affirm that a recycling service would be a success. Our local authority needs to lead by example and show commitment to improving recycling behaviour in the area. The community of Upper Claremont are more likely to recycle if the Municipality makes recycling a priority and provides education as well as services to encourage pro-recycling behaviour (Read 2001).

## Disclosure statement

The Authors reported that no competing financial interest.

## Notes on contributors

**Raymond Oriebe Anyasi** - University of South Africa, South Africa.

**H I Atagana** - University of South Africa, South Africa.

## References

Adomavičiūtė T, Kruopienė J, Varžinskas V & Gurauskienė I (2012). Waste Sorting Habits by the Community of Kaunas University of Technology, Reasons and Influencing Factors. Environmental Research, Engineering and Management 4: 57-67.

Akil AM & Ho FCS (2015). The Effects of Socio-Economic Influences on Households Recycling Behaviour in Iskandar Malaysia. Social and Behavioural Science 202: 124-134.

Bao, R. (2011). Waste and Recycling Attitudes and Behavior of Students in Turku. pp, 20-24. Master Thesis, University of Turku, Finland.

Bortoleto, A. P., Kurisu, K.H., Hanaki, K. (2012). Model and Development for Household Waste Prevention Behaviour. Waste Management 32: 2195-2207

City of Cape Town. (2016). City of Cape Town Waste Review. Available from: https://www.capetown.gov.za/en/Solidwaste2/PublishingImages/Flyer_Waste_Review_Eng.pdf (accessed August 23, 2016)

Fiorillo D (2013). Household waste recycling: National survey evidence from Italy. Journal of Environmental Planning and Management 56: 1125-1151.

Kim Y & Choi, SM (2005). Antecedents of green purchase behaviour: An examination of collectivism, environmental concern and PCE. Advances in Customer Research 35: 595-599.

Latif SA, Omar MS, Bidin YH & Awang Z (2012). Environmental Problems and Quality of Life: Situational Factors as a Predictor of Recycling Behaviour. Procedia- Social and Behavioural Sciences 35: 682-688.

Mtutu P & Thondhlana G (2015). Encouraging Pro-environmental Behaviour: Energy Use and Recycling at Rhodes University, South Africa. Habitat International 53: 142-150.

Mutang J & Haron S (2012). Factors Predicting recycling Behaviour among Malaysian. Southeast Asia Psychology Journal, 1: 68-80.

Oasis Association. (2016). Employment Opportunities: http://www.oasisrecycling.co.za/Page.php?pageID=9 (accessed August 30, 2016).

Oelofse S (2013). South Africa's Household Recycling Target. Available from: http://journals.co.za/content/CSIR (assessed May 21, 2016)

Oskamp S (2002). Environmentally responsible behaviour- Teaching and promoting it effectively. Analysis of Social and Public Policy 2: 173-182.

Pakpour AH, Zeidi IM, Emamjomeh MM, Asefzadeh S & Pearson H (2014). Household Waste Behaviours among a Community Sample in Iran: An Application of the Theory of Planned Behaviour. Waste Management 34: 980-984.

Read, A. D. (2001). National Strategy, Local Practice and the Solid Waste Management Gap- A Local Authority Management Perspective on Sustainable Solid Waste Management. pp. 21-37 Unpublished PhD thesis. School of Geography, Kingston University, Kingston upon Thames: Surrey, UK.

Robinson G & Read A (2005). Recycling behaviour in a London Borough: Results from large-scale household survey. Resources, Conservation and Recycling 45: 70-83.

Statistics South Africa. (2011). City of Cape Town Key Statistics. Available from: http://www.statssa.gov.za/?page_id=1021&id=city-of-cape-town-municipality (assessed August 24, 2016)

Tabernero C, Hernandez B, Cuadrado E, Luque B & Pereira CR (2015). A Multilevel Perspective to Explain Recycling Behaviour in Communities. Journal of Environmental Management 159: 192-201.

US Environmental Protection Agency. (2016). Recycling Basics. Available from: https://www.epa.gov/recycle/recycling-basics (assessed May 21, 2016).

**Summary output**

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.89188 |
| R Square | 0.795449 |
| Adjusted R Square | 0.774994 |
| Standard Error | 8.101448 |
| Observations | 12 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 1 | 2552.332 | 2552.332 | 38.88766972 | 9.68E-05 |
| Residual | 10 | 656.3345 | 65.63345 | | |
| Total | 11 | 3208.667 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 0.919341 | 3.561157 | 0.258158 | 0.801520412 | -7.01541 | 8.854094 | -7.01541 | 8.854094 |
| interest in waste management | 2.378318 | 0.381385 | 6.235998 | 9.68E-05 | 1.528539 | 3.228098 | 1.528539 | 3.228098 |
| | | | | 0.0000968 | | | | |