

Pilot Project of Waste Management Services
Enhancement in Newcastle Local Municipality

MUNICIPAL WASTE SEPARATION AT SOURCE (S@S) IMPLEMENTATION: GUIDELINE DERIVED FROM THE PILOT STUDY LEARNINGS

2021-2022



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Acronyms

CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and the Environment
DM	District Municipality
EPR	Extended Producer Responsibility
EPWP	Extended Public Works Programme
FAO	Food and Agriculture Organisation
KZN-EDTEA	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
LM	Local Municipality
POPIA	Protection of Personal Information Act
SALGA	South African Local Government Association
S@S	Separation at Source
UNEP	United Nations Environment Programme

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EXECUTIVE SUMMARY

Municipal solid waste management in South Africa is still dominated by the disposal of waste to landfills. Landfills are running out of space to receive waste and are under pressure due to increasing waste volumes associated with population growth, urbanisation, and economic growth. The 2012 National Waste Management Strategy of South Africa set a target of 25% diversion of recyclables from landfills for reuse, recycling, and recovery by 2016. Furthermore, all metropolitan municipalities, secondary cities and large towns must have initiated separation at source programmes across the country. In this context, the United Nations Environment Programme (UNEP) South Africa partnered with DFFE, Newcastle Local Municipality, the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA), the Council for Scientific and Industrial Research (CSIR) and Chama-cha Waste pickers to pilot a waste separation at source (S@S) project in Newcastle Local Municipality. The aim of the project was to test the roll-out of S@S in two communities (Schuinshoogte-middle to high income and Siyahlahla La-low income); and documenting the lessons learned (led by the CSIR) with the intention of potentially replicating similar projects in other municipalities. The roll out of the pilot study started off with planning to conceptualise the implementation of the project by all the stakeholders. The plan was then executed in three phases starting with a background household recycling survey, then operations of the roll-out of the pilot study were implemented in the two areas communities. The study was finalised with a pilot recycling program evaluation survey undertaken when the project was well established in the communities. Both pilot study areas received a weekly waste collection service from the municipality. The municipality provided black bags to the households and collects mixed waste on a weekly basis. The S@S pilot study introduced clear bags for the separate collection of source-separated recyclables. Chama-cha issued each household in

the study area with four (4) clear bags once a month. Households sorted their waste at source using the clear bags for mixed recyclable materials. Chama-cha then collected the clear bags on the same day that the municipal trucks collected the black bags. Collection of the clear bags were done using a passenger vehicle and trailer combination. Based on the agreement with the municipality, all clear bags irrespective of the content were collected by Chama-cha. The Chama-cha team sorted the waste. Sorting of the recyclables were initially done at an open area on the landfill, but heavy rains experienced during the pilot study rendered conditions at the landfill unfit for sorting. This resulted in the municipality creating a recycling point at the local garden waste site where the Chama-cha staff could sort the waste. The yield of recyclables collected from the low-income area was more variable than the yield from the middle-to-high income area, but the combined yield was more than 600kg/week. Newcastle Local Municipality benefitted from diversion of waste away from the landfill, saving landfill space. Job opportunities were also created by the S@S pilot study within the case study communities. In addition, Chama-cha, the service provider benefitted from having easy access to source separated recyclable materials and attending the training workshop on COVID-19, S@S, and the business elements of implementing source separation presented by PETCO and UNEP. The pilot study has shown that there is potential to divert a significant amount of recyclable waste away from landfill by introducing a waste S@S pilot project in both middle-to-high income areas and low-income areas of Newcastle. The diverted recyclables are valuable secondary resources which could contribute to greening the economy in the municipality but even more importantly, finding local markets for the materials in the municipality will also contribute to the circular economy in the municipality. This will contribute to job creations and economic growth to the benefit of the local communities.

A. SETTING THE CONTEXT

Municipal solid waste management in South Africa is still dominated by waste disposal to landfill. Landfills are running out of space to dispose waste and are under pressure due to increasing waste volumes associated with urbanisation, population-, and economic growth. Diverting waste away from landfill reduces the volume of waste disposed, extends the operational life of the landfill, and more importantly, unlocks economic opportunities (including recycling) for waste materials in a circular economy. In this regard, the 2020 National Waste Management Strategy (DEFF, 2020) calls for the separation of municipal solid waste at source while “strengthening and expanding the role of waste pickers e.g., through integrated separation at source, in the waste management system and recycling economy” (DEFF, 2020). Furthermore, the Extended Producer Responsibility (EPR) Regulations published on 5 May 2021 have introduced mandatory EPR in South Africa which came into effect on 5 November 2021. This means that producers of packaged goods are now also responsible for the management of the post-consumer packaging waste, including its collection, sorting, and recycling.

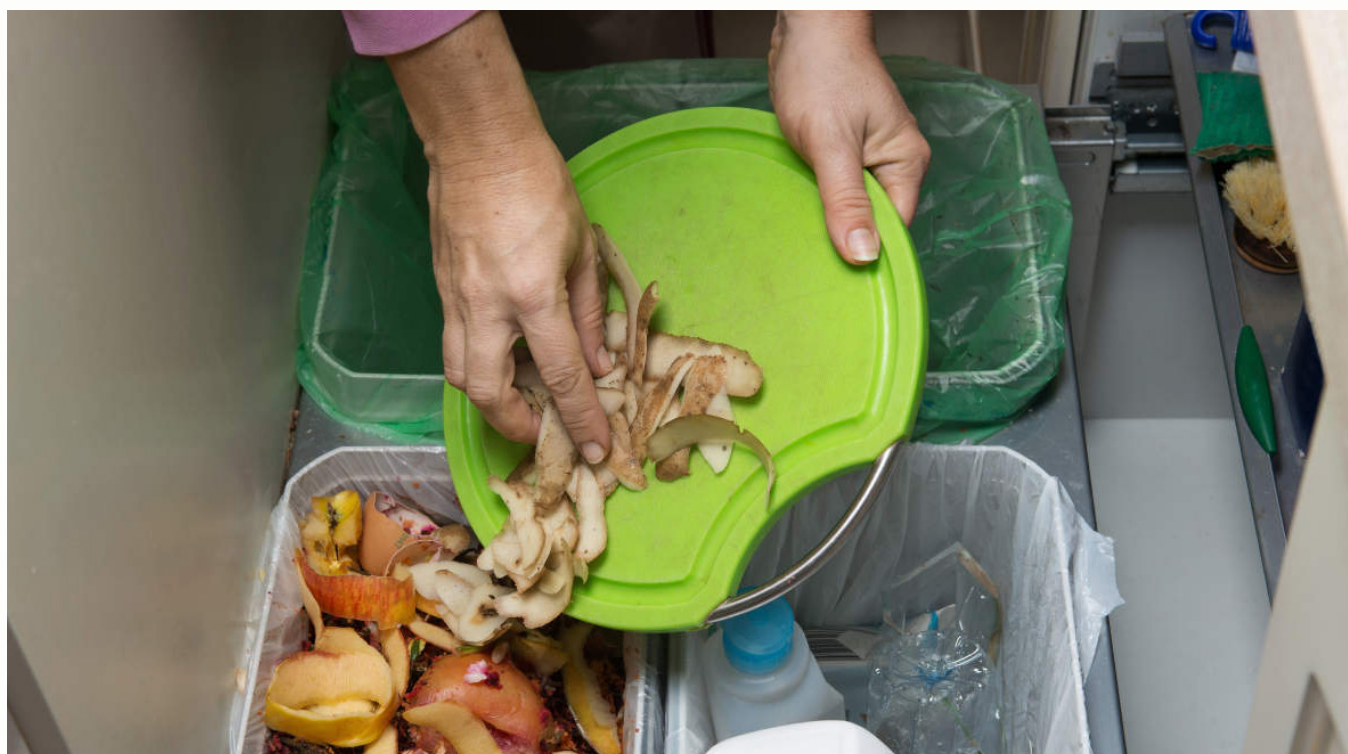
Just before compulsory EPR came into effect, a waste separation at source (S@S) project was piloted in the Newcastle Local Municipality (LM) with financial support from the United Nations Environment Programme (UNEP) and technical assistance from the Department of Forestry, Fisheries, and the Environment (DFFE), and the Council for Scientific and Industrial Research (CSIR). The intention of this project was to evaluate the implementation of a waste S@S initiative in one middle-to-high income area and one low-income area to inform the development of a guideline on implementing S@S in local municipalities. This guideline is therefore based on the experiences and learning from a real-life pilot study in South Africa.



B. WHAT IS SEPARATION AT SOURCE (S@S)

Waste S@S is the action whereby waste is sorted into different fractions at the point of generation, for example in the household kitchen, or on the property before the waste is put out for collection. There are many different S@S systems that can be applied. These include (WC DEADP, 2019):

- **Split bags:** Different waste streams are placed in different bags or containers according to waste types or a mixture of waste types in a bag. Often it is simply a two bag, wet waste/dry mixed recyclables system.
- **Buy-Back Centres:** Generally fixed centres where clean, sorted recyclables are purchased.
- **Swap Shops:** Most suitable for use for S@S in low income and informal communities.
- **Public Place Recycling (PPR):** Separate bins for different materials, especially glass, are placed in public areas to encourage recycling.
- **Events:** Similar to public place recycling but bins are placed at event venues to promote and encourage recycling.
- **Waste Drop-offs:** These sites allow businesses and the public to drop off recyclables and other types of waste for free, or a fee.
- **Materials Recovery Facility (MRF):** Facilities where waste is received and



Example of separation at source at home.

C. WHY IS S@S IMPORTANT?

Waste S@S is important for:

- Ensuring that the recyclable materials are not contaminated by food and other wet waste:
 - Making it easier to sort and process for recycling;
 - Increasing the value of the recyclable materials when sold to recyclers; and
 - Improving the working conditions of waste sorters by reducing odours and attracting less flies and vermin to the operations.
- Making the diversion of waste away from landfill easier through introducing separate collection systems.
- Creating job opportunities in the collection, sorting and recycling industry.
- Reducing windblown litter and fire hazards at landfills.
- Extending the lifespan of the landfill by reducing the waste volumes being disposed of.
- Contributing to a circular economy where materials are retained in the economy for as long as possible.
- Reducing the environmental impacts associated with resource extraction and waste disposal by improving efficiency in resource use.

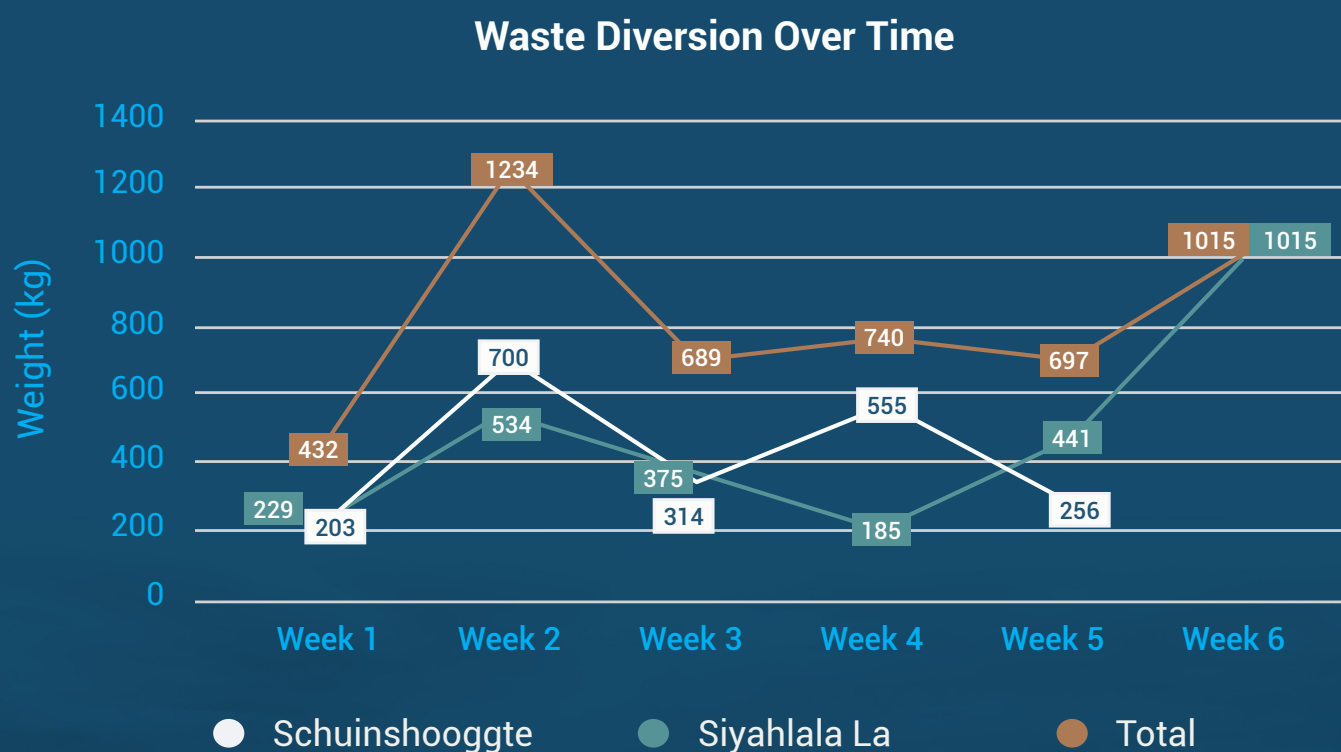


Figure 1: Waste diversion per area over time (Data: Chama-cha).

D. WHAT IS THE PURPOSE OF THIS GUIDELINE?

The purpose of this guideline is to assist municipalities towards implementing waste S@S pilot studies similar to the one implemented in the Newcastle LM. The guideline is aimed at sharing the learning from implementing waste S@S on the ground based on practical experience gained during the Newcastle pilot study.

This guideline does not intend to replace or duplicate the information contained in other guidelines developed by national and provincial departments in South Africa. These guidelines are available online and should be read in parallel to this guideline:

Parallel Guidelines

-  DEA (n.d.): Guidelines on separation of waste at source <http://sawic.environment.gov.za/documents/9390.pdf>
-  DEADP, (2019): A Guide to Separation of Waste at Source September 2019. https://www.westerncape.gov.za/eadp/files/atoms/files/WCape%20Govt%20Municipal%20S%40S%20E-Guide_%2010%20-9%20-19Final.pdf
-  DFFE and DSI (2020): Waste Picker integration guideline for South Africa: Building the recycling economy and improving livelihoods through integration of the informal sector <https://wasteroadmap.co.za/wp-content/uploads/2021/02/Waste-Picker-Integration-Guidelines.pdf>
-  SALGA (2013) Good Practice Guide to: Waste Transfer Stations, Material Recovery Facilities and Buyback Centres.
-  Department of Human Settlements (2019): The Neighbourhood Planning and Design Guide. <http://www.dhs.gov.za/content/dhs-red-book>



E. WHAT DID THE NEWCASTLE LM PILOT STUDY ENTAIL?

The Newcastle LM pilot study implemented a split bag S@S initiative in two communities in Newcastle LM namely:

Schuinshoogte



Middle-to-high Income Area

10,502
Households

Siyahlahla La



Low Income Area

1,705
Households

The S@S study also included two household surveys, namely:

1.

A background household recycling survey that was conducted at the onset of the pilot project to solicit information on the household knowledge of recyclable materials and their willingness to participate in the pilot study. It was also aimed at understanding what would be required to motivate households to participate in waste S@S.

2.

An evaluation survey that was conducted towards the end of the pilot study to determine the success of the pilot study in terms of community engagement and the effectiveness of the communication materials and messages. It also aimed to solicit feedback from participating households on their experiences and satisfaction with the S@S initiative, and their willingness to continue separating waste at source into the future.

E.1 Funding of the Pilot Study

Funding support for the study was provided by UNEP and secured by DFFE. UNEP sponsored the clear bags, printing of the communication materials, and a training workshop which included accredited training on COVID-19, S@S, and the business elements of implementing source separation. UNEP also funded the services of the CSIR to provide expert advice, document the study, and develop this guideline.

DFFE provided in-kind support through the secondment of one staff member to oversee the operations of the S@S pilot study in Newcastle LM, including the printing of the survey questionnaires and liaison between DFFE,

UNEP, CSIR, Chama-cha and the Newcastle LM. DFFE staff further assisted with the pilot study activities including the door-to-door survey interviews.

Newcastle LM provided in-kind support in the form of hosting the launch of the project, providing a facility for the sorting of the waste and assisting the service provider with collections on an ad-hoc basis to avoid service interruptions due to vehicle breakdowns.

The service provider, Chama-cha, did not receive any payments for participating in the pilot study other than for the sale of the recyclables.

E.2 The Beneficiaries of a S@S Project

The Local Municipality (Newcastle LM) benefitted from diversion of waste away from landfill, saving landfill space.

The service provider benefitted from having easy access to source separated recyclable materials and attending the training workshop on COVID-19, S@S, and the business elements of implementing source separation presented by PETCO and UNEP.

Other beneficiaries of the training workshop included officials from the Local Municipality, buy-back centres, and waste pickers.

The community, in this case, Siyahlala La benefitted from job opportunities created by the S@S pilot study. Waste pickers benefitted from working with the service provider and gaining access to larger quantities of cans and tins collected as part of the S@S pilot (refer to Section 5.7.2 for more detail).

E.3 Selection of the Service Provider

Chama-cha is a local, Newcastle-based Small, Medium and Micro Enterprise (SMME) that was founded by youth during the Covid-19 pandemic. They were concerned about the dirty state of the communities and started with clean-up campaigns. Chama-cha pro-actively approached the Newcastle LM to understand how they could get involved on a more permanent basis in clean-up campaigns and recycling. This opened the door for their involvement in the pilot study. At the time of

planning for the pilot study, Chama-cha was brought in as a partner, but no formal contracts were signed. The relationship between Chama-cha and the Newcastle LM can be described as nothing more than a "gentlemen's agreement". Participation in the S@S programme created four additional job opportunities at Chama-cha. Employees were recruited from Siyahlala La, the low-income area included in the pilot study.

E.4 Sharing of Costs and Benefits

The cost and benefit sharing on this project worked as follows:

E.4.1 The Local Municipality

Newcastle LM provided a sorting area and assisted with arrangement for bins and bags for Chama-cha to use. The local Ward Councillors assisted with awareness raising in the community and with the distribution of the communication materials.

The benefit for the municipality was that recyclable materials were diverted from landfill, extending the operational life of the landfill, while contributing to the local circular economy. Jobs created by the pilot study offered employment opportunities to four (4) residents of the local low-income area. The recyclable materials were sold to local recyclers in the industrial area of Newcastle LM. Therefore, all economic benefits of the

pilot project were retained within the boundaries of the LM and benefitted local businesses

E.4.2 The Service Provider

The service provider, Chama-cha, distributed the clear bags in the pilot study area, contributed continuous awareness raising and education of the communities in the pilot study areas, and collected the source separated waste at no cost to the community or municipality. Chama-cha further also sorted the waste at the sorting area and transported the recyclables to the recyclers in the industrial area.

Chama-cha benefitted from having access to source separated waste, and a sorting facility provided by the municipality at no cost to Chama-cha. Furthermore, Chama-cha received the full income secured by the sales of recyclable materials. The pilot study also

opened-up an opportunity to grow the business and provided training on S@S as well as business skills development.

E.5 Project Launch

The Pilot study for the Newcastle LM S@S was officially launched on the 18th September 2020, by His Worship, Dr Mahlaba, the then Mayor of Newcastle LM. The launch was attended by other political principals who together with the mayor provided buy in from the senior management of the LM. The Municipal Mayor reiterated that the aim was to contribute towards the LM's waste minimisation plan (by diverting at least 93% of waste away from the landfill sites), to create employment and to save natural resources and energy. Ultimately, the desired outcome was to prolong the longevity and lifespan of landfill sites across Newcastle and surrounding areas. An operationalisation engagement was then convened locally and attended by officials from the local municipality (Newcastle), the Disytrict Municipality (Amajuba), UNEP South Africa, DFFE, KZN-EDTEA, Councillors, waste pickers and residents of the

E.4.3 Participating Communities

The participating communities benefitted from receiving a S@S kerbside collection service at no additional charge to households while four community members benefited from the job opportunities that were created.

area. Only 100 participants could be accommodated at the launch due to Covid-19 protocols being enforced (**Photo 1**).



Mayor Cllr Dr. Ntuthuko Mahlaba.
Newcastle Local
Municipality



Photo1: S@S Programme Launch in Newcastle LM (Photo credit: Newcastle LM EYABANTU Newsletter).

The Operationalisation Engagement included the following:

Dr. Brian Mubiwa:

United Nations Environment Programme (UNEP) South Africa

- Benefits of S@S include cleaner environments in human settlements, extending landfill lifespan, generating energy from waste (long term) and money in the pocket through selling of waste.
- Benefits are reliant on the segregation of waste at source.
- If successful, then the pilot will be upscaled to other areas.

Dr. Thava Kelly:

Newcastle Local Municipality (LM)

- The project is supported by the highest office of the municipality (i.e., Executive Mayor and the Municipal Manager).
- The municipality will provide support to Chama-cha, the company collecting the recyclable waste.

Mr. Andrew Motha:

Department of Forestry, Fisheries and the Environment (DFFE)

- Different stakeholders, including waste pickers, have a role to play in waste management.
- Separating waste at source contributes to the waste economy.
- Clean environments contribute to tourism.
- Learning from this project will guide other municipalities.
- Team effort between all spheres of government is required.

Ms. Xolile Ngobese:

*KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs
(KZN EDTEA)*

- S@S is embedded in the Waste Act and National Waste Management Strategy.
- S@S saves money for the municipality, by diverting waste away from landfill.
- Reduced environmental impacts from waste.
- Acceleration of the circular economy.
- Importance of registration as a cooperative was highlighted.

Mr. Ntshangase:

Member of the Ward Committee in Schuinshoogte

- Importance of the community awareness regarding their role in S@S.
- Support for waste pickers to continue assisting the municipality to divert waste from landfill.
- Commitment to report back to the Ward Committee and the Schuinshoogte Community.
- Community meeting scheduled for the following day was used to raise awareness of the project.



E.6 Community Education and Awareness

Formal awareness raising of the project was limited to the distribution of the information at the launch and handing materials to the Ward Councillors to distribute to households in the pilot areas who could not attend the launch. The brochures contained information on keeping families and waste workers safe as well as the correct disposal of waste during the Covid-19 pandemic (**Photo 2**). The fridge magnets were to remind residents of the importance of recycling and contains the relevant information on the materials that must be source

separated and included in the clear bags provided for recycling as illustrated in **Photo 3**.

Additional ongoing awareness raising throughout the pilot study was undertaken by the Chama-cha team when distributing the clear bags for S@S, and also on collection day while doing the collection rounds. The Ward Councillors in both areas have also agreed to support the project through ongoing community engagement.



Photo 2: Pamphlets handed to households (Photo credit: Suzan Oelofse).



Photo 3: Fridge magnets distributed to households in the study areas (Photo credit: Suzan Oelofse).

E.7 Collections During the Pilot Study

Both pilot study areas benefit from a weekly waste collection service from the municipality. The municipality provided black bags to the households and collected mixed waste on a weekly basis. Most households in Schuinshoogte put their bags on raised platforms on collection day as illustrated in **Photo 4**, so as to ensure they are out of reach of dogs and other animals. The Siyahlala La community on the other hand, waited until they heard the collection truck to put out the waste to avoid dogs from tearing the bags. Siyahlala La also had a weekly food waste collections system implemented by a local pig farmer who provided buckets for food waste and then collect the food waste on Sundays at no cost to the community or municipality.

The S@S pilot study introduced clear bags for the separate collection of source-separated recyclables. Chama-cha, a local youth owned SMME, issued each household in the study area with four (4) clear bags once a month. Households sorted their waste at source using the clear bags for mixed recyclable materials. Chama-cha then collected the clear bags on the same day that the municipal trucks collect the black bags. Collection of the clear bags are done using a passenger vehicle and trailer combination. Based on the agreement with the municipality, all clear bags irrespective of the content, were collected by Chama-cha.

In addition to collecting the clear bags, Chama-cha also cherry-picked recyclable materials from the black bags. They also collected black bags that obviously contained mostly recyclable waste.



Photo 4: Raised platform where bags are placed on collection day in Schuinshoogte.



Photo 5: Collection of source separated waste by Chama-cha.

E.8 Who Sorted the Waste and what did the Sorting Area Look Like?

The Chama-cha team sorted the waste. Sorting of the recyclables were initially done at an open area on the landfill, but heavy rains experienced during the pilot study rendered conditions at the landfill unfit for sorting. This resulted in the municipality creating a recycling

point at the local garden waste site where the Chama-cha staff could sort the waste. The municipality erected a signpost indicating the location of the sorting area and provided bins and bags for the sorting of the waste (**Photo 6**).





Photo 6: Waste sorting activities at the Newcastle Municipality Recycling point.

E.9 The Involvement of Waste Pickers

About 100 landfill waste pickers attended the training workshop that was hosted by UNEP and PETCO. Chama-cha further made an informal arrangement with the street waste pickers in the pilot study area. Street waste pickers in the pilot study areas mainly collected scrap metal including cans and tins. In order not to negatively impact on the waste pickers, Chama-cha involved the

pickers in the collection of the S@S materials and at the end of the day, handed all the metals to the pickers. The arrangement was that the pickers take turns to work with Chama-cha and get access to the metal cans and tins. The arrangement between Chama-cha and the street pickers was informal and based on mutual trust.

F. LIMITATIONS OF THE PILOT STUDY

There were several limitations that negatively impacted on the project planning and execution.

01.

The launch and implementation of the project was delayed due to protest actions at the municipality. Since safety of workers was a priority, time was allowed for the unrest to subside.

02.

The project was conceptualised during the Covid-19 pandemic. As a result different lockdown levels needed to be implemented during the planning and launch of the project. This resulted in limited participation of 100 dignitaries and community members at the launch of the project.

03.

The CSIR's involvement in the study was limited to attendance of monthly virtual meetings and two two-day site visits to the pilot study area due to budget limitations.

04.

The distribution of links to electronic survey questionnaires was not possible due to the provisions of the Protection of Personal Information Act, 2011 (POPIA).

05.

Most of the project meetings were conducted virtually, with carefully considered (limited) in-person engagements by stakeholders, due to COVID-19 restrictions.

06.

The 2021 local government elections were held on 1 November 2021 after being postponed from 27 October 2021. The elections had a negative impact on the roll out of the project since municipal officials were pre-occupied with planning and campaigns in the run-up to the elections. Furthermore, residents questioned the motive of the municipality when rolling out the pilot project a few weeks prior to the local government elections.

07.

Election Day was declared a public holiday and consequently collection of the recyclables in Siyahhlala La could not start on Monday 1 November as planned and per the normal collection schedule.

G. LESSONS LEARNT FROM IMPLEMENTING S@S IN A LOCAL MUNICIPALITY

This section of the guideline provides guidance required to avoid obstacles and challenges similar to those experienced in the Newcastle LM S@S pilot study. Each aspect of the pilot study is discussed followed by the specific lessons that were learnt.

G.1 Community Surveys

Introducing a waste S@S initiative requires community members to change their waste management behaviour at household level. It is therefore advisable and good practice to engage with community members to gain insight into the community's perceptions of the general waste collection service provided in the area, the potential impact of waste S@S on the current system, and their expectations relating to waste S@S. The most critical reason for community engagement is to assess their willingness to participate in a waste S@S initiative and to customise the S@S initiative to meet the needs of the community. Furthermore, this engagement also serves to determine the community's awareness and level of understanding about what can be recycled and what not. Prior knowledge of the community awareness and knowledge of recycling will help to customise the information shared with communities during the roll-out of the project.

The background survey questionnaire that was used is included in Appendix A.

Although the background survey should ideally be done before education and awareness activities commence, it is advisable to provide advance warning of the dates and reasons for the survey and how the fieldworkers can easily be identified to avoid potential conflict between residents and fieldworkers.

Conducting the evaluation survey at the end of the pilot requires a similar approach as the above mentioned. The evaluation questionnaire that was used in Newcastle LM is included in Appendix B.

Lessons Learnt

- The background survey must be done well in advance of the roll-out of the S@S project, but before the launch of the project. This is necessary to inform the planning of the initiative and to ensure meeting community needs. The community should be made aware that a S@S recycling project is in the pipeline and that their inputs are required to inform the planning of the project.
 - Communities must be made aware of the purpose of the survey without influencing their responses.
 - Communities must be warned in advance if door-to-door interviews will be conducted and informed of the time when the survey will be conducted and how the fieldworkers will be identified.
 - Electronic questionnaires require access to relevant software for respondents to easily respond online. Some software packages (i.e., Survey Monkey) can be accessed free of charge, but with limitations on the number of questions and the complexity of the questions.
 - Electronic questionnaires must be prepared in advance and links made available for distribution in the study area
- The provisions of the Protection of Personal Information Act, 2021 (POPIA) limits the use of electronic means to distribute links to online surveys.

- Ward Councillors may distribute the link to the entire ward using social media if the entire ward is included in the study area.
- Distribution of the link to the electronic questionnaire with monthly utility bills is possible but should be planned well in advance. The process of getting approval to distribute the questionnaire link with the utility bill is time consuming. Enough time should be allowed in the planning for the roll-out of the project to get everything in place.
- The municipal website and social media pages could be used to raise awareness of the project and to share the survey links.
- Conducting survey interviews require a team of fieldworkers that are familiar with the project and can respond to questions of residents.
 - Door-to-door survey interviews works well in low-income areas where community members are at home during the day.
 - Door-to-door surveys in middle-to-high-income areas were conducted on Saturdays when most working residents were at home. Survey questionnaires must be translated into the local languages to maximise the value of the data collected.
- Extended Public Works Programme (EPWP) workers could be trained to assist as fieldworkers to conduct the interviews.
- Distributing hard-copy survey questionnaires is easy and can be done with the distribution of the clear bag, but collection of completed questionnaires may be a challenge.
 - Survey questionnaires in a Johannesburg study was put in a zip-lock bag and tied with string to the gate of residences in a middle-income area. Residents were asked to tie the completed questionnaire to the gate for collection the following day. Although this method is time consuming and labour intensive, it worked very well. The zip-lock bag was used to protect the questionnaires in the event of rain.

G.2 Securing Political Buy-in

Political buy-in right from the start of the initiative is essential for success. This is especially true when relying on the Ward Councillors to assist with communication to communities during the roll-out. Ward Councillors are also active in receiving complaints from communities and could assist with the reporting of issues to ensure that breakdowns in services are attended to. Combined with political buy-in is the timing of implementation. Changes in political leadership require securing political buy-in from the new leaders.

Lessons Learnt

- Council approval is required: The submission to the municipal council must be well motivated within the context of the National Development Plan, Medium Term Strategic Framework, National Waste Management Strategy, among others and clearly outline the different role players and their roles and responsibilities during the implementation of the project. The motivation must also include a detailed budget indicating the funding requirements, how it will be financed (including in-kind contributions) and outline the savings that are likely to be realised through diversion of waste away from landfill i.e., extending the lifespan of the landfill. The motivation should also be well aligned with the Council priorities indicating potential for social upliftment and job creation and transitioning to a circular economy.
- All Councillors must be informed: Ward Councillor support is required to mobilise the communities to participate the project, but all Councillors must be aware of the initiative to be able to respond to questions by residents from outside of the study area.
- Avoid election years if possible: It complicates the roll-out of the project and result in unplanned delays as discussed below:
 - Preparations for local government elections divert the attention in the municipality away from normal operations to assisting with campaigns and infrastructure for the elections. It is therefore likely that officials normally

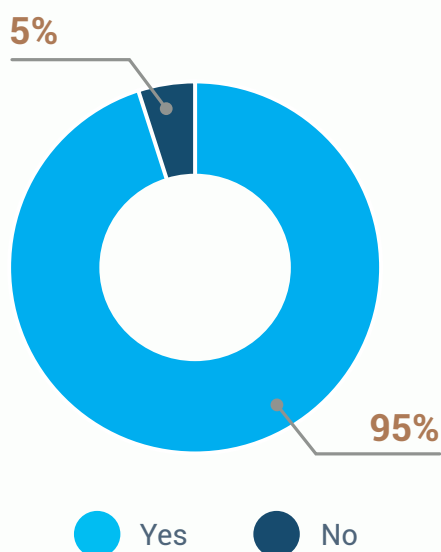
- involved with the planning and roll-out of the S@S project, may be pre-occupied with elections.
- Changes in political leadership may result in unrest and protest actions that are likely to impact negatively on service delivery, including the roll-out of the S@S project.
- Changes in ruling party may upset the political buy-in received at the start of the project. This may require re-approval of the project by the new council.
- Implementing a waste S@S initiative just before local government elections could be viewed as political manipulation which can hamper community buy-in to participate in the project.

G.3 The Importance of Reliable Collections Systems for non-Recyclable Waste

The collection service for non-recyclable waste must be reliable and effective to build community trust when rolling out a waste S@S initiative. Communities are unlikely to participate in a waste S@S initiative if the normal mixed waste is not collected regularly. They may perceive the S@S initiative as a waste of municipal funds. Furthermore, introducing a waste S@S initiative in an area with unreliable waste collections will inevitably result in mixed waste contaminating the recyclables defeating the purpose of waste S@S.

A.

Do you receive waste collection services?



B.

Frequency of waste collection

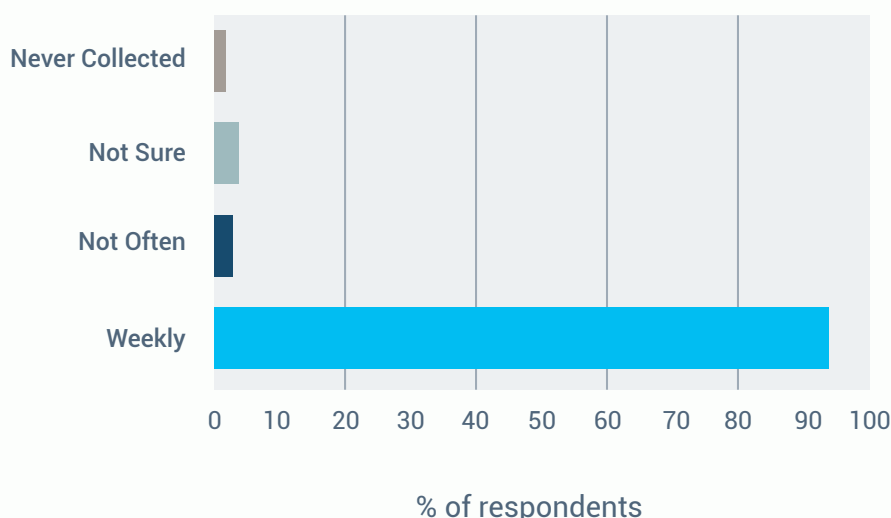


Figure 2: Reported waste collection service (A) and frequency (B) in Siyahlala La.



Photo 7: Fridge magnet providing guidance on what to put into the clear bag and what not.

Lessons Learnt

- Community members simply use the clear bags from the S@S initiative for the mixed waste when the municipality fails to distribute black bags.
- Clear bags meant for collection of recyclables are used for grass clippings and garden waste if more waste is generated than what would fit into the black bags provided.
- Mixed waste included in clear bags adds to the tailings that must be disposed of at landfill. This adds cost to the service provider if a gate fee is charged at the landfill.

G.4 Community Mobilisation to Participate in S@S

Communities require information on the project, instructions on how to participate – what must be put in the bag, when must the bag be put out for collection, and the required tools in the form of bags or bins. Therefore, communication at the start of a waste S@S initiative is key to the success of the initiative. The aim of the communication is to share enough information to enable community members to effectively participate in the initiative. The communication should include the following:

- Background information on the project, including why it is important to participate, who is paying for the project, who benefits, and information on the environmental considerations.
- Information outlining what is expected of the community and when the source separated recyclables will be collected.
- Clear guidance on what is recyclable and what should be included in the clear bags.

Innovative mechanisms can be used, such as printing the basic information on fridge magnets, as illustrated in **Photo 7**.

Lessons Learnt

- Ward Councillors must be informed of all the details of the project which they can share at Ward

meetings with the communities. This empowers them to accurately respond to questions from community members within and outside of the area of implementation.

- Different communication strategies are required for different areas.
 - low-income community members suggested community meetings for initial information sharing.
 - middle-to high-income residents suggested adding more information on the municipality website.
- Residents want information on the background of the project i.e., why is it being implemented, who is paying for it, who are the service providers, who benefits, are job opportunities created etc.?
- Residents only participate if they know the following:
 - what is expected of them?
 - what should be recycled?
 - when are collections done? .
- The launch must ideally include the majority of the residents in an area, to inform them appropriately and distribute communication materials..
- The door-to-door background survey was an excellent awareness raising exercise.
- The Distribution of fridge magnets as a communication tool is a successful example of information sharing for participating households

What would motivate people to participate in S@S

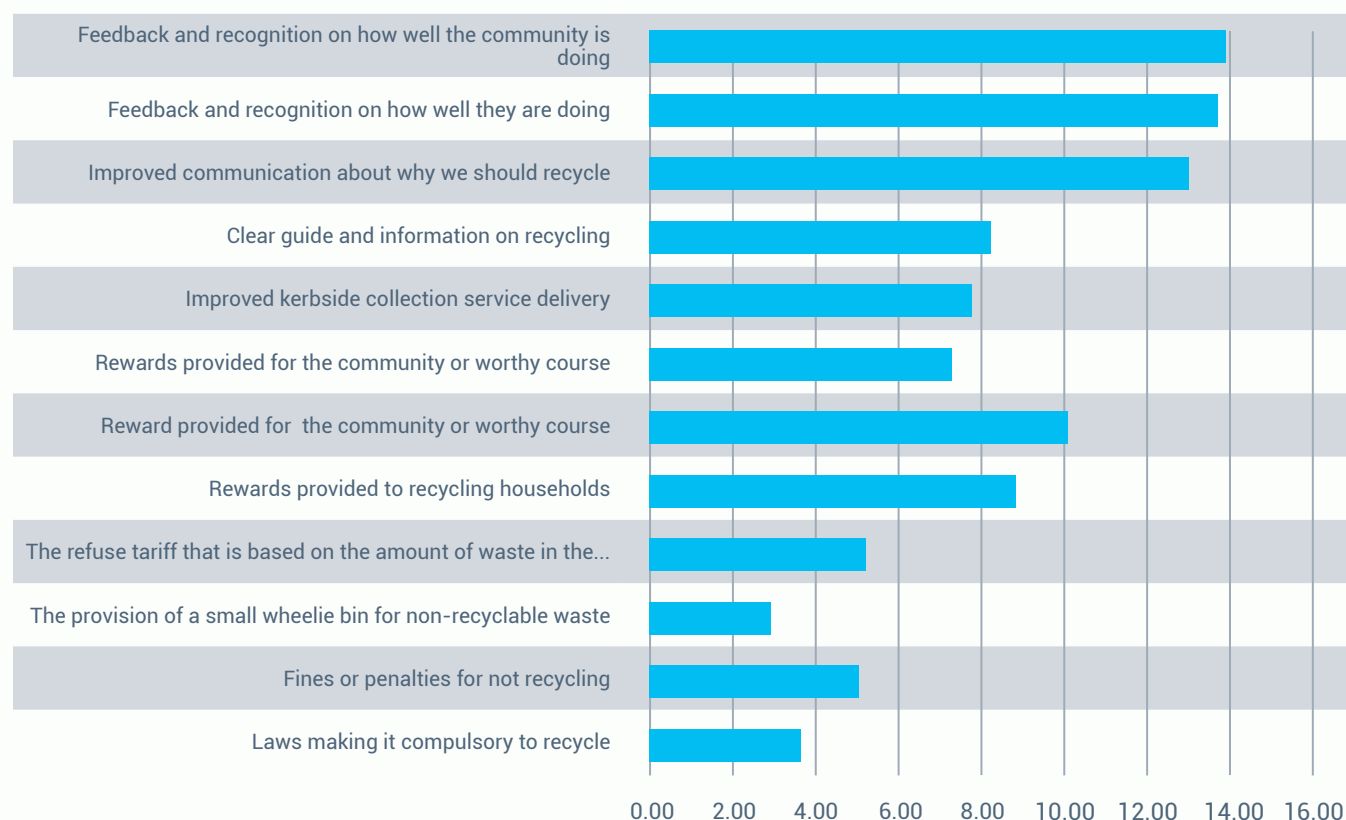


Figure 3: Factors that may motivate people to participate in S@S by number of respondents from Siyahlala La.

G.5 Creating an Enabling Environment for S@S

An enabling environment would allow collaboration between the municipality and the private sector for the collection and sorting of the source separated materials and could include kerbside collection and/or well-kept drop-off centres within easy reach (Western Cape Government, 2019).

As an example, in the pilot study, an enabling environment was created for kerbside collection of source-separated recyclables. The project procured the clear bags to facilitate S@S. The collections are undertaken by a local, youth owned, small business who earn an income based on the sale of the recyclables. Although the municipality does not have an official contract with the service provider, they have issued a letter to the service provider granting them permission to collect the source-separated recyclables. Waste pickers also operate in the area but are not formally integrated.

Key success factors of the pilot study were the high level of buy-in from all the stakeholders involved; the initiative taken by the service provider to continuously engage with the communities to increase household participation and accuracy of sorting; cherry-picking waste from the study area; and involving the informal sector.

Lessons Learnt

- Involving a local business that employs members of the low-income community encourage community participation and builds trust and confidence in the project.
- The service provider will go the extra mile to maximise recovery of materials from the study area through increased household participation and cherry-picking of materials if it benefits the business and increases their income secured through the sale of the materials.

- The service provider coordinates collections with the driver of the municipal truck to ensure that recyclables are removed before the collection truck arrives.
- All truck drivers must be aware of the S@S to avoid truck drivers collecting clear bags with the normal black bags.
- In the absence of a formal contract, the municipality has little control over the activities of the service provider and no means to enforce performance targets. This could easily be an issue if the service provider is unreliable.
- Sorting of recyclables at landfill is not feasible especially during the rainy season, which may necessitate the municipality to set up a formal sorting area at a garden site.
- Setting up a formal waste recycling point results in community members dropping off recyclables, but also non-recyclables for the service provider to deal with.
- Additional bins and receptacles are required to enable proper sorting and storage of the sorted materials for bulking purposes.
- The recycling point requires additional infrastructure such a roof structure, ablution facilities, and electricity connection for improved working conditions and the allowance for baling of materials.
- Informal waste pickers operating in the pilot study can be integrated into the project by the service provider. They can work together since the local waste pickers mostly target metal cans. These metal objects collected by the service provider can be given to the informal pickers. This waste stream is therefore not included in the reporting to the municipality by the service provider.

G.6 Delineation of a Pilot Area for S@S

The pilot study area is typically a relatively small area or areas within a municipality where the S@S programme is tested. The purpose of a pilot study is to test different aspects of the S@S initiative before it is rolled-out in the larger municipal area. Clear delineation of the study area is therefore imperative to ensure communication, information materials, and clear bags reach the targeted audience only. The delineation of the area must be clearly communicated with the service provider, targeted communities, and Ward Councillors. Unclear delineation of the study area may result in operational challenges and may cause frustration of the targeted community and may result in non-participation of certain households.

Lessons Learnt

- Confusion on the delineation of the area results in gaps in communication and bags being distributed in areas not targeted for inclusion in the initiative which created community confusion and frustration.
- Clear bags with source-separated recyclables outside of the pilot study could be collected by the municipal truck for disposal at a landfill, creating frustration of community members.
- Participating households outside of the target area can be left without a S@S service. To mitigate potential the frustration, the service provider can provide a service in these areas, helping eager households to continue recycling. Although admirable, it resulted in the data collected by the service provider not providing a clear picture of the successes in the pilot study area.



H. WHAT MUST I DO TO IMPLEMENT A S@S PILOT STUDY IN MY LM?

The main issues to consider when planning to implement a S@S initiative can be summarised as follows:

01.

The securing of financial and other resources to support the planning and implementation of the study. The pilot study could potentially be funded through donor funding, but large-scale roll-out of S@S must be supported through the inclusion thereof in the Integrated Waste Management Plan and the Integrated Development Plan, for the municipality.

02.

Planning should be done well in advance of the actual planned implementation date.

03.

Political buy-in must be secured as early as possible in the process and be maintained throughout the implementation of the project.

04.

Background surveys are intended to inform the planning of the project and should be conducted as part of the planning process.

05.

The service provider must be part of the planning process to ensure their buy-in and support for the implementation of the project.

06.

At pilot study level, the service provider does not necessarily require a formal contract if no payments will be exchanged between the municipality and the service provider. Income from the sale of recyclables collected from the study area could be enough incentive for SMMEs to become partners in pilot studies.

07.

Infrastructure required for the sorting and storage of waste must be secured and available at the time of implementation. Sorting facilities for the pilot study could be allocated at existing waste infrastructure such as garden drop-off sites, transfer stations, or a dedicated area at the landfill. This will however likely be insufficient for large scale roll-out of S@S.

08.

All partners involved in the pilot study, as well as the Ward Councillors and the waste management staff (including all drivers) must be fully briefed and familiar with the study area boundaries and the operations as rolled out in the study area.

09.

High level communication on the project should be widely distributed in the municipality to raise a general awareness of the project in the municipal area, but the detail communication aimed at the community in the target study area should be directed at them only.

10.

Awareness raising and education in the study area must be ongoing throughout the study period.

11.

Data on the successes and failures of the pilot study must be documented to inform future adjustments that may be required before the initiative is rolled-out in a wider area of the municipality.

12.

The community in the pilot study area must receive feedback on the project achievements and specifically on the benefits realised by their participation.

13.

The large-scale roll-out of S@S following the pilot study should ideally continue without interruptions in the service provided in the pilot study area in order to maintain the goodwill and participation of the participating households.

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Annex A: Questionnaire at start of the project

HOUSEHOLD RECYCLING SURVEY

Dear Resident,

The CSIR have been contracted by UNEP to conduct research around recycling in the Newcastle Local Municipality. The purpose is to understand the reasons as to why households currently do or do not recycle, and to identify what Newcastle Local Municipality can do to promote recycling.

We will be collecting data through questionnaires and interviews with residents. The purpose of the questionnaire is to get an understanding of households' willingness for participating or not participating in this program. You are invited to participate in this research, as your area is one of the selected by the Newcastle Local Municipality.

It will take about 10-15 minutes to complete the questionnaire. Please note that there are no correct or incorrect answers. Your response is anonymous and all answers you provide will be used for the purpose of this study only, with only the project team having access to the data. No data will contain any information through which participants/houses can be identified. Therefore, the project team requests your honesty in providing answers to the questions.

Should you have any questions concerning the study, you are welcome to contact the **project leader**:

Prof. Suzan Oelofse

e-mail: SOelofse@csir.co.za

Telephone: 021 841 4333 (please leave a detailed message)

Should you have any concerns about the study which you wish to bring to the attention of the **CSIR's Research Ethics Committee**, please contact Dr Sandile Ncanana, the CSIR REC Secretariat, R&DEthics@csir.co.za / 0128414060.

Consent

☐

I hereby confirm that I've read and understood the purpose of this survey and that I agree to participate in the study. I understand that the information I provide will be used for [please tick the box to indicate consent].

Demographic information

Gender

M	F	Other

Race

Age Bracket

Black	Coloured	Indian	White	Other

18-24	25 – 34	35 - 44	45 - 54	55 – 64	➤ 64

1. What kind of waste is generated in the household?

Plastic	Boxes	Cans	Glass	Paper	Food	Garden

Other? Please specify

2. Do you receive waste collection service?

Yes	No

3. How often is your waste collected?

.....

4. How full is your bin on a collection day?

Less than half	Half	Full	Overflowing

5. Who usually takes out the bin on a collection day?

.....

6. Are you aware of waste recycling?

Yes	No

7. Would you participate in a waste separation program?

Yes	No

If NO, what are the reasons?

.....

.....

.....

8. Are there any waste pickers going through your bin on a waste collection day?

Yes	No

9. If yes, how full are their trollies on average?

Less than half	Half	Full	Overflowing

10. What would motivate people to participate in waste separation? Please tick any 3 most important from the options listed below by ticking.

	Laws making it compulsory to recycle
	Fines or penalties for not recycling
	The bin for non-recyclable waste is smaller so they would have to put less waste in the bin
	The refuse removal tariff is based on how much waste they put into their wheelie bin/black bag
	Rewards are provided to the individual / household for recycling (cash, vouchers, discounts, points for shopping etc.)
	Rewards are provided for the community or for a worthy cause
	Improved infrastructure for recycling (buy back centres, drop off facilities, etc.)
	Improved kerbside collection service delivery
	Clear guidance and information on what, how, when and where to recycle / improved communication about the programme
	Improved communication about why we should recycle
	Feedback and recognition on how well they are doing
	Feedback and recognition on how well the community is doing

If you don't wish to answer some or all the questions above, please select one of the following:

☐

I prefer a face-to-face or telephone interview [*please provide your relevant contact details*]:

Name: Tel no

Address:

☐

I prefer to submit only a partially completed questionnaire

THANK YOU FOR PARTICIPATING IN THIS SURVEY!

Annex B: Questionnaire at end of the project

PILOT RECYCLING PROGRAM EVALUATION SURVEY

Dear Resident,

As you may know, the CSIR have been contracted by the United Nations Environment Programme (UNEP) in collaboration with the Newcastle municipality to conduct research around recycling in the Newcastle Local Municipality. The Municipality is testing a pilot scale programme for household waste recycling in Schuinshoogte and Siyahhlala where residents are required to sort their household waste before collection. The purpose of this survey is to get feedback from residents on their experience with the recycling programme being tested by the Newcastle municipality. Your participation in this survey is important to help evaluate the successes and failures of the pilot study. The feedback received through the survey will provide valuable information for the CSIR to make informed recommendations on possible changes and improvements to the recycling system before scaling it up to other areas.

We will be collecting data through questionnaires and interviews with residents, municipal officials and people involved in the collection of the recyclables. You are invited to participate in this research, as a resident in one of the selected areas for pilot testing the recycling programme in the Newcastle Local Municipality.

It will take about 10-15 minutes to complete the questionnaire. Please note that there are no correct or incorrect answers. Your response is anonymous and all answers you provide will be used for the purpose of this study only, with only the project team having access to the data. No data will contain any information through which participants/houses can be identified. Therefore, the project team kindly requests frank and honest responses to the questions. You have the option to skip questions without any negative consequences to you, if you are not comfortable or able to provide a response.

Should you have any questions concerning the study, you are welcome to contact the **project leader**:

Prof. Suzan Oelofse

e-mail: SOelofse@csir.co.za

Telephone: 012 841 4333 (please leave a detailed message)

Should you have any concerns about the study which you wish to bring to the attention of the **CSIR's Research Ethics Committee**, please contact Dr Sandile Ncanana, the CSIR REC Secretariat, R&DEthics@csir.co.za / 012 841 4060.

If you prefer a face-to-face or telephone interview [please provide your relevant contact details]:

Name: Tel no

Consent ☐

I hereby confirm that I've read and understood the purpose of this survey and what the collected data will be used for [please tick the box to indicate consent].

Study area where you stay (please tick the applicable are):

Siyahlalala ☐ Schuinshoogte ☐

COMMUNICATION ABOUT THE RECYCLING PROGRAMME

1. Are you aware of the pilot recycling programme in your area? (Please tick the relevant box)

Yes	☐	No	☐
-----	--------------------------	----	--------------------------

2. How did you learn about the recycling programme in your area? (Please tick all relevant)

Municipality handing out fridge magnets and pamphlets	☐
Local newspaper	☐
Social media	☐
Communication from the ward Councillor	☐
Neighbours informed me	☐
Other (please specify)	☐
	☐

3. Did you receive sufficient information to enable you to actively participate in the programme?

Yes	☐	No	☐
-----	--------------------------	----	--------------------------

4. Are there any additional information that should have been shared? Please share

5. Please provide suggestions on how the communication could be improved, if any.

6. How would you rate the communication about the recycling programme?

Poor	☐	good	☐	Very good	☐	Excellent	☐
------	--------------------------	------	--------------------------	-----------	--------------------------	-----------	--------------------------

OPERATIONS OF THE RECYCLING PROGRAMME

7. Did you receive bags for recyclables to be collected?

Yes		No	
-----	--	----	--

8. How often did you receive bags for collection of recyclables? Please indicate number of bags received next to the option

Once-off at start of project		Weekly		Monthly	
------------------------------	--	--------	--	---------	--

9. How many bags of mixed recyclables (paper, plastics, tins, glass etc) does your household typically put out for collection in one week?

1		2		3		4		More than 4	
---	--	---	--	---	--	---	--	-------------	--

10. Were the bags of recyclable waste collected on time as per the schedule provided?

Yes		No	
-----	--	----	--

11. Please indicate who collected the bags containing the recyclables

Municipality		Chama cha Waste pickers		Informal waste pickers		Other: please explain
--------------	--	-------------------------	--	------------------------	--	-----------------------

12. Please indicate where the bags of recyclables are taken by the collectors:

Landfill to be sorted at a dedicated area		Buy-back centre		Landfill site for disposal with mixed waste		Other: please explain
---	--	-----------------	--	---	--	-----------------------

13. Did you experience any problems with the collection of the recyclables during the past month?
(Please provide detail)

14. Please provide suggestions on to how the collection of recyclables could be improved, if any.

15. How would you rate the service for collection of source separated mixed recyclables (paper, plastics, tins, glass etc) in your area?

Poor		good		Very good		Excellent	
------	--	------	--	-----------	--	-----------	--

16. Please indicate how likely your household is to participate in the recycling programme going forward?

Definitely not		May be		Definitely	
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Demographic information

Gender

Race

M	F	Other		Black	Coloured	Indian	White	Other
			Age Bracket					
18-24	25 – 34	35 - 44	45 - 54	56 – 64	➤ 64			

THANK YOU FOR PARTICIPATING IN THIS SURVEY!



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