

# GAUTENG ENVIRONMENTAL RESEARCH SYMPOSIUM

## *Integrated Waste Management*

**Focus: Townships, Informal settlements,  
and Hostels (TISH) areas.**

**ANNUAL REPORT**  
2023/24 FY



**GAUTENG PROVINCE**  
AGRICULTURE AND RURAL DEVELOPMENT  
REPUBLIC OF SOUTH AFRICA



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|        |  |
|--------|--|
| ARO    | African Reclaimers Organisation                                      |
| COJ    | City of Johannesburg   |
| COP    | Community of Practice  |
| CEE    | Centre of Environmental Education                                    |
| DFFE   | Department of Forestry, Fisheries and Environment                    |
| DWS    | Department of Water and Sanitation                                   |
| EAP    | Environmental Assessment Practitioners                               |
| EISD   | Environment and Infrastructure Services Department                   |
| EV     | Electric Vehicles  |
| EPPC   | Environmental Policy, Planning and Coordination                      |
| GCRO   | Gauteng City-Region Observatory                                      |
| GDARDE | Gauteng Department of Agriculture, Rural Development and Environment |
| GERS   | Gauteng Environmental Research Symposium                             |
| GHG    | Greenhouse Gases   |
| GP     | Gauteng Province   |
| GPG    | Gauteng Provincial Government  |
| GTAC   | Government Technical Advisory Centre                                 |
| HOD    | Head of Department   |
| NGO    | Non-Governmental Organization  |
| PEETS  | Process, Energy & Environmental Technology Station                   |
| S@S    | Separation at Source   |
| SDG    | Sustainable Development Goals  |
| TMRI   | Transforming, Modernizing and Re-Industrializing                     |
| UJ     | University of Johannesburg   |

|        |   |
|--------|---|
| UNEP   | United Nations Environment Programme                  |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNSG   | United Nations Secretary-General                      |
| WEF    | Water Energy Food nexus                               |
| WWTPs  | Wastewater treatment plants                           |

## Executive Summary

Over 5.14 million academic articles-including surveys and conference proceedings, are produced annually globally (Curcic, 2023). Millions and trillions of currency is invested yearly for production of these articles. However, due to the red tapes and costs of publishing of results only 8.9% of these go beyond being the property of institutions to being consumed by the public. One can therefore safely say that the solutions to today's anthropocentric epoch are possibly lying in institutional repositories and the chances are that repetitive studies will be carried out to seek the unshared existing answers.

The symposium hopes to help breach this gap by creating a platform for sharing of research/project's findings by inviting and hosting field experts as well as officials from various departments, academia, researchers, and other stakeholders, with the aim of shaping the discussions towards the selected theme of the financial year. In this case 2023/24 focused on the transition towards zero waste by 2055, a commitment made by the National government, and provincial government's contribution to South Africa's (national) environmental commitments.

Therefore, the main aim of the symposium can be summarised as follows: creating a platform for providing feedback on actions, initiatives and programmes that are in line with the selected theme of the year, as well as planned initiatives by various implementing and benefiting institutions; enhancing knowledge sharing and networking (research collaboration) particularly regarding operational and strategic environmental issues; identifying gaps in available research and also networking and working together within the Gauteng City Region (GCR) while benefiting the general public.

As mentioned above, this year's theme was "Integrated Waste Management in the Gauteng Province, with a special focus on townships, informal settlements and hostels". The theme of the 2023/24 fy symposium is adopted from the World Environment Day which focuses on solutions to plastic pollution under the campaign #BeatPlasticPollution.

The rationale for prioritisation of plastic pollution is that the world is being inundated by plastic. More than 400 million tonnes of plastic is produced every year, half of which is designed to be used only once. Of that, less than 10 per cent is recycled. An estimated 19-23 million tonnes end up in lakes, rivers and seas. Today, plastic clogs our landfills, leaches into the ocean and is combusted into toxic smoke, making it one of the gravest threats to the planet. Not only that, what is less known is that microplastics find their way into the food we eat, the water we drink and even the air we breathe.

Many plastic products contain hazardous additives, which may pose a threat to our health. South Africa generates 2.4 million tonnes of plastic waste every year, equivalent to 41kg of plastic waste per citizen, which means that plastic is just under 20% of the 12.7 million tonnes of waste generated per year.

The symposium was preluded by a student track on the 5th of October 2023 (see attached call for abstracts). The prelude was important as it gave students from various academic institutions an opportunity to present their research findings that were in line with the theme of the day. From the presentations held, the overall winner was awarded assistance to publish their studies which will aid to the 8.9% of research studies that get published annually. The winner got a standing ovation from the symposium after presenting on her study that showed how nanoplastics get absorbed by vegetables, end up in the food we eat and ultimately in the human blood stream, which contributes to the rationale for prioritisation of plastic pollution. Please see attached presentation of the winning presentation from the student track.

The symposium had a podcast session (see attached podcast report) which ran in parallel with the main proceedings of the day. The purpose of the podcast session was to interview the head(s) of Gauteng Department of Agriculture, Rural development, and Environment (GDARDE), the keynote speaker, waste pickers (or reclaimers, as they prefer to be called) who attended the symposium, as well as other stakeholders. The focus of the discussions was to not only to appraise the status quo of the collaborative work done by the province (GDARDE) with its partner UJ PEETS in tackling the urgent, complex challenges, and wicked problems experienced today but also to discuss the growing global sustainability trends and

challenges such as climate change, urbanisation, sustainable food systems, transition towards renewable energy sources and circular economy. For example: Climate change – Gauteng is not immune to the negative impacts of climate change such as desertification, extreme weather, and floods amongst other extremes. Vulnerability to challenges like these results from rapid urbanisation that threatens the coping capacity of inadequate infrastructure and planning, which has a ripple impact on policy implementation, with geo-economic and geostrategic consequences, while geopolitical competition in all spheres of the government is intensifying and putting pressure on their efforts in achieving development.

## **Introduction**

We are living in an era of rapid urbanization and population growth, and solid waste management is a critical piece for sustainable, healthy, and inclusive cities and communities. However, it is often put on the back burner when it comes to urban development, in turn compromising Section 24 of the Constitution, which states that: Everyone has the right to an environment which is not harmful to their health or well-being. To this end this symposium's theme was "Integrated Waste Management in Gauteng Province, with a special focus on townships, informal settlements and hostels". The Department carries the broad mandate of developing strategies, policies, and programmes to respond to the challenges and potential impact of the sustainable use of the environment within the Gauteng Province. To this end, the Department in partnership with the University of Johannesburg's Process, Energy & Environmental Technology Station (PEETS); hosted the 5th Annual Gauteng Environment Research Symposium (also referred to as the GERSV) on the 26th of October 2023. The event was supported by the Council for Scientific and Industrial Research (CSIR); The Gauteng City-Region Observatory (GCRO); the African Circular Economy Network (ACEN); Madam Waste; The EPR Waste Association of South Africa (eWASA); Pro Alliance, Department of Forestry, Fisheries, and the Environment (DFFE); amongst other partners.



## **Purpose**

The aim of this report is to serve as a fifth annual report of the Gauteng Environmental Research Symposium (GERSV) and provide feedback on the proceeding of the event (symposium) held on the 26th of October 2023. It is intended to not only give highlights and insights into the various activities – pre and during, but to also appraise the identified, critiqued and elected (voted on by attendees) areas that future research should focus on. The purpose of hosting the Symposium is to bring together environmental researchers from various institutions such as government departments, academic institutions, research-based institutions, research funding institutions, consulting companies, NGO/CBO and parastatals involved in environmental research/ projects and other relevant fields, with the aim of deliberating on the selected theme for the financial year.

Just like every other event, project or programme that has changing focus over a period of time, the symposium has objectives that are agile and modified annually to be in line with the purpose and set theme for the financial year. They can be summarised as follows:

Discuss the status quo of the integrated waste management in the country, with the main focus of Gauteng province.

Share best practice approaches in the environmental sector with regards to actions that can advance the province's contribution to the integrated waste management.

Provide a platform for networking and collaboration on current research programmes, which are particularly relevant for the provincial priorities in terms of the Growing Gauteng Together 2030 Plan.

Strengthen the knowledge sharing amongst government officials, academia, researchers, and other stakeholders.

Identify gaps in available research. Identify areas for research collaboration.

Develop action plans to take research forward with regards to more impactful integrated practices.

Share best practice approaches that can inform policy and implementation to enhance action towards the Province's climate resilience and sustainable development goals.

### **Amendments since the previous symposium-GERS4**

Below is a highlight of changes that were observed compared to the previous event that took place in the previous financial year – 2022/23. However, the contributions from participants were enhanced and overall interactions improved. The Symposium was hybrid, giving the option to attend physically as well as online since after COVID 19. Prelude of the symposium: Student track.

- Podcast sessions in parallel to the actual event.
- The prize to assist with publication of the research work awarded to a student. Inclusion of waste pickers/reclaimers who stay in TISH areas.
- Merging of both online and physical attendees during the session on Mentimeter to vote for projects to be prioritised in future (next financial year).
- Identification of follow up projects that have quantifiable social impacts.

### **The symposium's structure**

The Symposium was a hybrid event. It began with a plenary session for presentations to the entire audience which were followed by Parallel Group Discussions or breakaway sessions. Due to the non-structured discussions the below breakaway sessions showcase the different efforts and contributions that the different groups deliberated on, given the limited time allocated.

## Plenary: Lessons from Waste Picker Integration Initiatives

The activities for this session included a keynote presentation given by Prof Melanie Samson, based in the University of Johannesburg. Her presentation focused on Lessons from Waste Picker Integration Initiatives: Development of Evidence Based Guidelines to Integrate Waste Pickers into South African Municipal Waste Management Systems.



*Illustration1: Integration*

**Key takeouts from the keynote address can be noted as follows:**

### **Factors that facilitate reclaimer integration in Johannesburg**

The research identified a number of factors that facilitated reclaimer integration in Johannesburg, including:

#### **Social and Cultural Push Factors**

- Media coverage of reclaimers, reclaimer integration, the contributions of reclaimers, and African Reclaimers Organisation (ARO)'s struggles,
- Increasing public awareness of reclaimers as the creators and core of Johannesburg's system to collect recyclables,
- Increasing awareness amongst the public and officials of the strong, negative effects for reclaimers of Separation @Source (S@S) that excludes them,
- Increasing willingness of residents to engage, support, and work with reclaimers,
- Resident associations and community groups proactively approaching reclaimers to support them and develop collaborative S@S initiatives, and
- ARO reclaimer presentations to school children, residents, and university students

#### **Political**

- Some recognition of reclaimers in Pikitup and Environment and Infrastructure Services (EISD) plans and strategies,
- Official commitments to empowering and integrating reclaimers, Willingness of officials to create time to work with reclaimers,
- Reclaimer organising and formation of ARO as a democratic reclaimer organisation through which reclaimers conduct their own analysis of integration, develop their visions and positions, mobilise to change official policies and programmes, and forge their own version of

integration,

- Creation of some temporary platforms and spaces to discuss reclaimers' grievances and concerns regarding EISD and Pikitup's integration and S@S programmes, and to develop ways of addressing these,
- Collaboration between EISD, Pikitup, the NGO Women in Informal Employment: Globalizing and Organizing

#### Economic

- Funding from WIEGO to organise reclaimers and provide ongoing, grounded support for reclaimers and ARO,
- Funding from companies and industry associations to pilot integrated S@S, and Existence of markets for recyclables.

#### **Environmental**

- Recognition of reclaimers' environmental contributions through the extension of landfills' lifespans and extraction of recyclables from the environment.

#### Factors that inhibit integration

A range of factors created significant challenges to, and undermined the success of, reclaimer integration in Johannesburg. It should be noted that many of these factors are related to broader political, economic, social, and cultural issues and are likely not unique to Johannesburg.

#### **Social and cultural**

- Ongoing dehumanization of reclaimers, Disrespect and infantilisation of reclaimers,
- Erasure of reclaimers' contributions (to the founding of the city's system to collect recyclables, ongoing diversion of materials away from landfills, the successful joint registration campaign etc.),

- Failure to recognise and respect reclaimers' knowledge and skills, Framing integration as charity, and
- Culture of top-down decision-making and charity approach.

## **Political**

- Absence of national policy, funding, and guidance for municipalities related to reclaimer integration, Insufficient municipal policies, programmes, and budgets for work with reclaimers,
- Inadequate key performance indicators for officials related to work with reclaimers,
- Lack of guidance and support for officials regarding how to facilitate participatory processes and work with reclaimers to design, implement, monitor, evaluate, and revise pilot projects,
- Lack of education and training for officials on reclaimers, the current system to collect recyclables in the city, reclaimers' role in the waste management system and recycling value chain, a holistic understanding of S@S, and integrated forms of S@S,
- Inconsistent policies and positions on reclaimers and S@S,
- Belief that S@S and reclaimer integration/empowerment initiatives can be conceptualized and implemented independently,
- Concern to ensure S@S does not negatively affect business vs no consideration of the effects for reclaimers or commitment to avoid them,
- Administrative hurdles to allocate land to provide infrastructure for reclaimers,
- Belief that Pikitup and EISD could renege on agreements and take unilateral decisions on collective processes, and
- Political leadership's dismissal of ARO and refusal to engage reclaimers concerns, proposals, and demands.

## **Economic**

- Lack of national government and industry funding designed to support reclaimer integration, Insufficient municipal and Pikitup budgets for reclaimer empowerment and integration,

- Lack of recognition that reclaiming is work,
- Assumption by the municipality that reclaimers should collect recyclables for free and nonpayment of reclaimers providing S@S services,
- Low and volatile prices for materials sold by reclaimers,
- No quantification of savings for the municipality arising from reclaimers' diversion of recyclables away from landfills and reduction in the quantity of waste materials to be collected by the municipality and Forcing reclaimers to sell to specific buyers.

### **Environmental**

- Not quantifying the environmental contributions of reclaimers or taking this into consideration, and Failure to see reclaimers as key environmental agents.

### **Break away sessions**

These sessions were made up of presentations and facilitated discussions with small groups of attendees. Participants with different expertise were able to share their knowledge in a more focused group discussion type of setting and participants were able to voluntarily choose topics they had more experience or interest in and were thus able to contribute to more.

The breakaway sessions are as follows:

### **The opportunities of transition to circularity as an option of waste management.**

#### **Background**

In recent years, the circular economy approach has become more popular among businesses and academic organizations. Every industry must embrace efficient waste management policies, strategies, and practices in order to make the shift from a linear to a circular economy. Initiatives to

better integrate waste management methods into the framework of the circular economy are crucial in this regard.

In order to maximize the use of current materials and products, the circular economy reduces production and consumption of goods by sharing, renting, reusing, repairing, refurbishing, and recycling them. The life cycle of items is extended in this way. When a product reaches the end of its useful life, recycling helps to keep as many of its components in the local economy as possible. They can be productively applied repeatedly, adding more value. The standard, linear economic paradigm, which is built on a take-make-consume-throw-away cycle, is defied by this. This concept depends on a lot of inexpensive, readily available energy and materials.

In addition to the aforementioned, recycling and recovery can be crucial in how we manage our natural resources since they reduce the amount we need to derive from our finite natural resources. There is a significant, unrealized potential for our economy to become more circular through sustainable waste management. This is especially crucial given the expanding need for production in order to meet the changing consumer preferences and the growing population. Regrettably, we recycle and recover relatively little on a worldwide basis right now. In addition to being low, recycling is currently trending downward, falling from 9% in 2018 to 8.6% in 2020, showing the lack of circularity of the global economy.

Circularity contributes to the sustainable use of resources and thus to preserving the environment. Reusing and recycling products would lessen the damage of landscapes and habitats, slow down the use of natural resources, and help to prevent the loss of biodiversity.

Reduced annual greenhouse gas emissions are another advantage of the circular economy. The current approach to the management of waste accounts for 3.32% of greenhouse gas emissions in the EU, whereas industrial processes and product consumption are to blame for 9.10% of emissions. Since more than 80% of a product's environmental impact is believed to be established during the design phase, producing more effective and sustainable products from the outset would aid in reducing energy and resource usage.

Another advantage of circularity is less dependence on raw materials. The demand for raw materials is increasing along with the global population. But there are only so many of the essential raw ingredients available. Due to limited resources, some nations rely on other nations for their raw



materials. Recycling raw materials reduces supply concerns such price fluctuation, availability, and reliance on imports. This is particularly true of essential raw materials required for the development of climate-essential technology like batteries and electric engines.

Developing a more circular economy might enhance employment, encourage innovation, and boost economic growth (700,000 jobs in the EU alone by 2030). Redesigning materials and goods for circular usage would foster innovation in a variety of economic sectors. More resilient and cutting-edge goods will be offered to consumers, improving their quality of life and long-term financial savings.

## **Discussions:**

The project that was deliberated on in this session was the Kat: CE - Resetting the System which was agreed on to show the relationship between circular waste management and the Agenda 2030. The identified projects or research focus areas that should be prioritised to promote the Integrated Waste Management, Focus on Townships and Informal Settlements were discussed using the economic value proposition of:

- Types and quantities of waste streams generated in townships, hostels and informal settlements and opportunities for recycling, reuse and valorisation TISH waste streams and opportunities -waste value chain.
- Linking potential economic (job creation and enterprise development) opportunities for residents of TISH from various waste streams generated at local industrial/mining operations Appraise a relationship between communities and businesses.
- Economic benefits of CE interventions using ecosystem services for environmental protection - potential health, environmental, educational, and financial spin-offs Sustainability gains from CE interventions - enviro, health, education.
- Identification and incorporation of TISH-Specific “industrial symbioses” as part of corporate ESR programs and potential “perverse outcomes” with reduced waste streams TISH-specific industrial symbiosis.
- An investigation of some “Perverse Outcomes and Unintended Consequences” from CE interventions
- possible disadvantages/unintended consequences of CE and reduced waste streams.

- The psychology of the CE paradigm shift and role of youth/children as “influencers” of responsible resource consumption.
- CE as a paradigm, youth as advocates for responsible consumption.

## **Inclusivity in the waste management value chain in Gauteng.**

### **Background**

There are a number of steps and process that outline how inclusivity in waste can be reached, they can be summarized as a manner of broadening, reclaiming, and socially just waste management value chains. Some of the most important measures that cities may take include:

Cities at the bottom of the value chain might act as advocates for the official acknowledgment and inclusion of undocumented waste workers in public initiatives, including those at the national level. They have the chance to develop regional policies with the active and meaningful involvement of informal waste workers, particularly the most marginalized groups along the chain. The decentralization of solid waste management systems, such as decentralized waste transfer stations or collecting and sorting centers, can be a chance to integrate undocumented waste workers into the system and give downstream stakeholders possibilities to advance up the value chain. Cities can also enhance the environment and working circumstances of informal waste workers by granting access to public infrastructure and storage areas.

Cities can promote collaboration between official and informal participants at the top of the value chain through extended polluter responsibility, reverse logistics, and sustainable procurement. Authorities can create incentives (via registration simplification or startup funding) to encourage upstream operators to become more formalized, as well as educate or provide training to aggregators and processors on inclusive waste management, safety, and ecologically friendly practices. Cities have the opportunity to advance intersectional strategies and gender transformational practices throughout the value chain, but doing so calls for improving staff and policymakers' knowledge of the issue and providing them with the necessary education.

The contradiction of being both visible and unseen is something that informal waste pickers in the busy streets of our cities have to deal with on a

daily basis. They are some of our society's most marginalized, demonized, criminalized, and invisible people, despite the fact that we see them everywhere. Even though they offer a crucial service that prevents recyclable material from ending up in landfills, their services are sometimes overlooked, underappreciated, and unacknowledged. But whether they are aware of it or not, they are all actively fighting for visibility in environments where they are stigmatized, discriminated against, disregarded, and seen as a danger to traffic and a nuisance.

## **Importance of Integration**

A study conducted by Godfrey (2021), indicates that informal waste pickers diverted around 51% of all paper and packaging waste collected in South Africa in 2017, while a Policy Briefing Note dated February 2016 (Godfrey et al), indicates that “informal pickers are estimated to have saved municipalities between R309.2 – R748.8 million in landfill airspace (in 2014), at little to no cost, by diverting recyclables away from landfill, at  $\pm$  16-24 tonnes/picker/annum”. This is critical as several metropolitan municipalities are quickly running out of landfill space, with some of them left with 5 to 10 years’ worth of air space available for waste disposal, this is according to 2018 reports (Eberhard, R, 2018) while the remaining capacity of landfills in other cities is declining and the processes to secure new regional sites are complex, contested and long (ibid).

Clear regulations and procedures that support informal waste managers' integration into the formal waste management value chain must be put in place in order to fully utilize their potential. The levels of government at the national, provincial, and local levels have made significant progress in acknowledging the contribution made by informal waste pickers and have established policies, strategies, and guidelines for municipalities and industry stakeholders on how to compensate waste-pickers for their services. To give them respectable employment opportunities and better integrate them into the nation's waste economy, they have launched programs targeted at improving the working conditions and livelihoods of informal waste pickers. Yet, these projects are still in their early stages, according to the National Waste Management Plan (NWMS) 2011.

While these initiatives have made some progress toward recognizing the value of informal waste managers, they fall short of establishing legally binding regulations that would guarantee that waste picking is a recognized job category and profession under national employment protection

laws, giving waste pickers legal standing. The measures also fall short of establishing occupational health and safety standards and giving waste pickers access to social protection programs. Other nations in the Global South, like Brazil and India, offer lessons.

The inclusion of informal waste managers in waste management systems and a recognition of their importance is crucial not only for their own health and livelihoods, but for the economies of municipalities as well. In cities where they operate, waste pickers may collect up to 25 percent of the municipality's waste. This saves considerable collection expenses, including transportation to a landfill, vehicle maintenance, salaries, and more. In 2014, Jain University, Hasiru Dala, and the Solid Waste Management Round Table (SWMRT) estimated that in Bengaluru, India, the city's 15,000 waste pickers saved the municipality nearly USD \$12 million annually by collecting over 1,000 tons of the city's 4,500 tons of daily waste. This system can be so effective that in countries like India over 90 percent of PET bottles sold are collected, proving that the recycling of certain high-value materials is not only viable, but provides much needed income for waste pickers.

## **Discussions**

There was a consensus that there are existing projects/ initiatives that the different organizations are carrying out that promote inclusivity in the waste management value chain. The 2 presentations shared in this session gave good examples of how this can happen.

The sessions looked at inclusivity from the perspectives of (1) the town planning system, (2) small business creation and creating independence for people/families who make a living from recycling, (3) waste reclaimers themselves and (4) small business owners in TISH areas.

The key learnings / take outs that implementing institutions have from the current projects that are being undertaken, that can help organizations that hope to contribute Agenda 2030 and Net Zero waste by 2050 were noted as follows:

- Extended Producer Responsibility (EPR).
- Identifying secondary markets for the products.

Identified projects or research focus areas that should be prioritised to promote the Integrated Waste Management, Focus on Townships and Informal Settlements were identified:

- There is a high level of awareness and willingness to recycle and lots of business opportunities but there are gaps connecting these two,
- Some of the gaps seem to exist between knowing where the waste is, collecting it and getting it to where it needs to be. Example of e-waste-how do we get appliances that people don't want to recycle,
- Data: there is still a need to know more nuanced information on waste - what volumes by type, who is recycling it, how much can be recycled and how do we ensure it gets shared with all role players (government, academia, private sector, and the public),
- We need to ask if our policy frameworks and government are supportive of the work within the waste sector - this is an ongoing area of work,
- Do we understand the waste behaviour, needs and opportunity for the business sector (particularly small businesses) as most recycling focus is on households,
- What is the role of the taxis and transport sector? A lot of goods are moved through taxis - can they play a role?

In summary:

1. Inclusivity in planning system.
2. Sustainability of small businesses.
3. Logistics of waste.
4. Potential of waste in government.
5. Behavioural/motivation for recycling.
6. 6) Role of transport sector especially taxis in circularity

### **Implementation of waste management legislation frameworks in Gauteng Province.**

The legislative framework governing waste management defines the state as the key player and does not recognize informal waste collection in South Africa. There is inconsistency between this framework and the practice on the ground regarding waste collection. While the framework puts the state at the centre, the reality on the ground is that of the lack of specific policy directed at waste recycling. Thus, this gap which was supposed to be overcome by the state has been filled by an informal waste collection enterprise. This breakaway session included a critical review of the legislative framework and revealed how it fails to take into account the reality of informal waste collectors who need to be empowered and formalized as they cover for the limits and failures of the state in Greater Johannesburg.

In South Africa Oelofse and Godfrey (2008, p. 5) conclude that “Currently most municipalities have a challenge to deliver sustainably waste management services”. Oelofse and Godfrey (2008) suggests four broad themes of the challenges faced by local authorities: financial management, equipment management, staff management and institutional behaviour with holistic planning and enforcement as one of the main issues. Most South African cities are characterized by non-integrated planning and poor implementation of waste plans when these do exist. There is inadequate enforcement of waste legislation and waste by-laws, and the successful prosecution of waste offenders is limited. These factors contribute to high levels of illegal dumping and littering accompanied by continued waste offences (Oelofse & Godfrey, 2008). The South African National Environment Management: Waste Act 59 of 2008 (NEMWA) gives municipalities regulatory powers with regard to waste management.

Municipalities have the executive authority to administer and provide municipal waste service delivery in their local communities (Constitution of South Africa, 1996). NEMWA requires that municipalities must set waste service standards which are aligned to provincial and national standards. The waste regulatory instrument that municipalities develop and implement in support of waste standards in order to implement NEMWA is municipal waste by-laws. These by-laws set standards for the entire waste management value chain – that is, waste generation, waste storage, waste transportation, waste treatment, waste recovery and waste disposal. To provide further guidance to municipalities, the South African Department of Environmental Affairs developed generic waste by-laws based on national waste standards. These by-laws were identified as a

regulatory instrument that can support the programme of effective and efficient delivery of waste services in South Africa (National Waste Management Strategy). The Gauteng Provincial Government serves as a primary regulatory authority for waste management activities.

The City of Johannesburg Municipal Council is one of the metropolitan councils of Gauteng Province. Municipal waste services provided by the City of Johannesburg are regulated and informed by the provincial waste management policy and strategies (Gauteng Provincial Integrated Waste Management Policy). Gauteng Provincial Government is mandated to ensure the provision of consistent, uniform waste collection and cleaning services which are equitable, appropriate, and environmentally and socially acceptable to Gauteng communities in accordance with the general waste collection standards for Gauteng. The waste services standards determined by the City of Johannesburg must be informed by and aligned to Gauteng province waste collection standards.

The City of Johannesburg Metropolitan Municipality (CoJ) has a statutory mandate to provide waste management services to CoJ citizens as articulated in the South African Constitution, Act 108 of 1996. Section 156(2) of the Constitution states that, “a municipality may make and administer by-laws for the effective administration of the matters which it has the right to administer” (South African Constitution, 1998, p. 76). To fulfil the statutory obligations of setting waste services standards as reflected in NEMWA, CoJ developed waste management by-laws that were promulgated in July 2013. Prior to these by-laws CoJ had by-laws which were gazetted in the year 2000. These by-laws repealed a number of waste by-laws that had been promulgated under the previous administration. It became necessary for these by-laws to be amended and aligned to NEMWA. Amending and aligning these by-laws provided an indication that CoJ understands that waste regulatory instruments at the local authority level need not be in conflict with national and provincial waste standards.

## **Questions:**

The organisations with legislated powers or mandate to implement waste management, together with projects they are implementing:

1. In this session the first presentation was given by Mr. Kgauta Mokoena- DFFE and the following was discussed.
  - Several national legislations including EPR

- Pillar 1 of the National Waste Management Strategy
- Needs all of us- government, Waste Picker Associations
- Regulatory instruments- carrot and stick
- Circular Economy- business redesign, create markets
- Percentages into the NWMS
- Pillar 2- Service Delivery
- Pillar 3- Compliance and Enforcement
- Initiatives for waste management
- Extended Producer Responsibility (EPR)
- Cooperatives support SAWIS
- State of Waste Report- being updated.

There was a question from Paul with regards to- Builder's rubble interventions?

- Working on Green procurement to encourage the use of the builder's rubble material; Support of the SMMEs- brick-making- industry Symbiosis;
- Encouraging the sector for the C&D to be utilised in construction; Not much market for the materials- needs an area;
- Built Environment Council & Green Building Council- there is continuous engagement;
- Urban Farming- health risk to use untreated water and collaboration with ARC in coming up with solution;
- Policies at National need to be complemented by Provincial and local by-laws, work with the criminal and justice system- to ensure proper



implementation;

- Local government- issue with the IWMP as a driver to implement waste- is it really implemented? Or just for compliance- disjuncture with the IDP

From the above-mentioned projects the following were agreed on to be a focus for waste minimization and diversion in the Province:

Malcolm Whitehouse- eWASA; Producer Responsibility Organisation registered with the Department; E- Waste; Paper & packaging with the implementation Timeline- July 2022; slow on the off-take of the projects- due to the delays in the concurrence letter; EPR has implications for the Industry, producers. To meet 4 categories that have been identified by the PRO Alliance- to take on the ERP responsibility; Benefits- levelling playing field, enabler, beneficiation.

- UJ Project in collaboration with the City of Joburg- Optimisation of waste management in Johannesburg,
- Other studies have been conducted on waste diversion in the City, reviewed other studies, and
- Importance of the separation is key- Materials Recovery Facilities are a good way of getting the waste to be separated in SA
- Large network of informal sector Foundation of proper circular economy Education and awareness
- Exploiting the value of organic waste- alternative Producers to stop producing non-recyclable plastic Municipalities to engage meaningfully.

Richard Sengani- Pro- Alliance: Alliance of PROs in the Paper & Packaging industry

- Facilitation of EPR on matters of common interest
- Engagement- collaboration with the municipalities- SMMES in recovery Awareness programme is needed in waste industry.
- Separation @ source to achieve waste management
- Understand waste pickers- registration- Hosted by the Pro-Alliance
- Model of collaboration- various stakeholders, government, SALGA, through MoUs.

- a) In the projects being implemented or in the pipeline, how is the waste minimisation considered/incorporated in the different stages of project- (i.e. Planning/ execution)?
- b) How is compliance to waste management monitored in your projects?

The key learnings / take outs that implementing institutions have from the current projects that are being undertaken, that can help organizations that hope to contribute Agenda 2030 and Net Zero waste by 2050 were noted to be as follows:

- Uptake from producers and recyclers throughout all the waste streams;
- Education and awareness- (producers especially in reporting – workshops , communities;
- Collaboration is key where the PROs need to operate and MoUs with the municipalities;
- Expectations from the reclaimers; lack of information's- service fees

The key projects or research focus areas that should be prioritised to promote the Integrated Waste Management, Focus on Townships and Informal Settlements:

- How do we find strategies and programmes for collaboration in awareness creation and education for the for responsible and compliant recycling across sectors - collaboration for awareness and education across sectors,
- How do we create meaningful and impactful collaborations among stakeholders e.g. meaningful collaboration between the reclaimers and the municipalities; Collaboration with Producer Responsibility Organisations in collaboration with municipalities - meaningful and impactful stakeholder collaborations,
- Does the producer responsibility apply for Construction and Demolition (C&D) waste- is there a gap for legislation in this regard - to create value producer responsibility for building waste, and

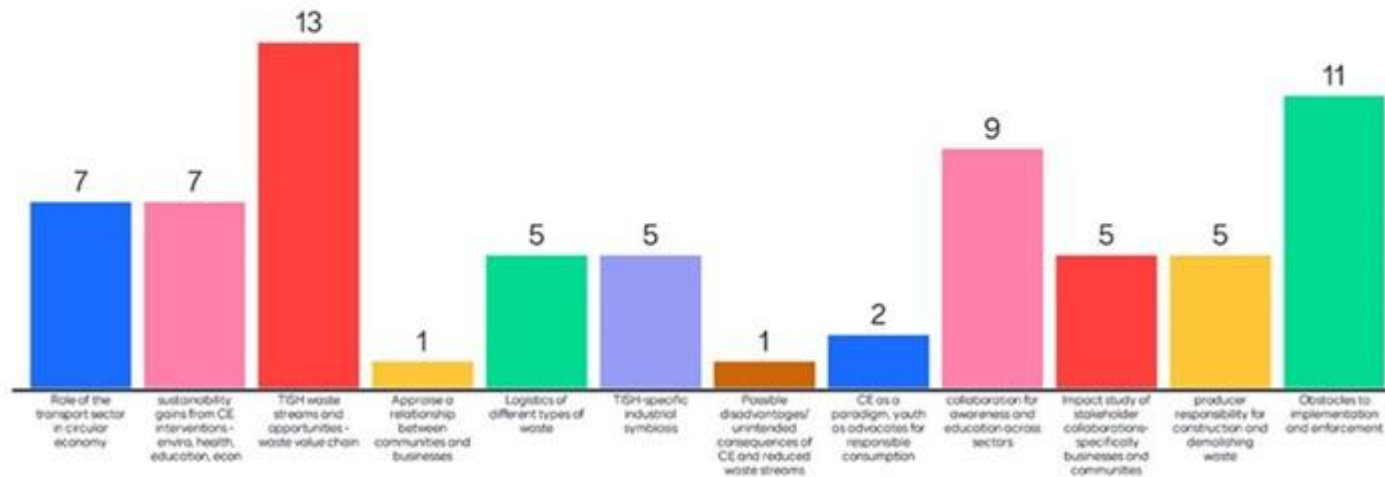
- What impedes the implementation, compliance and enforcement particularly the by-law enforcement - obstacles to implementation and enforcement.

### Summary of the above breakaway sessions'

The following projects represent the overall agreement of what the research focus area should be in the next financial year. A disclaimer: The below projects have been summarized and grouped together by officials from both GDARDE and UJ.

1. Role of the transport sector.
2. Sustainability gains from CE interventions - enviro, health, education, economic.
3. TISH waste streams and opportunities -waste value chain.
4. Appraise a relationship between communities and businesses.
5. Logistics of waste.
6. TISH-specific industrial symbiosis.
7. Possible disadvantages/unintended consequences of CE and reduced waste streams.
8. CE as a paradigm, youth as advocates for responsible consumption.
9. Collaboration for awareness and education across sectors.
10. Impact study of stakeholder collaborations- specifically businesses and communities.
11. Producer responsibility for construction and demolishing waste.
12. Obstacles to implementation and enforcement.

# Prioritisation of research projects



## Conclusion

From the proceedings of the day one can note that the circular economy issue has become more popular among businesses and academic organizations. It is recommended that every industry embraces efficient waste management policies, strategies, and practices in order to make the shift from a linear to a circular economy. Initiatives to better integrate waste management methods into the framework of the circular economy are crucial in this regard.

In order to maximize the use of current materials and products, the circular economy reduces production and consumption by sharing, renting, reusing, repairing, refurbishing, and recycling. The life cycle of items is extended in this way. It refers to minimizing waste. When a product

reaches the end of its useful life, recycling helps to keep as many of its components in the local economy as possible. The fifth annual Gauteng Environmental Research Symposium (GERSV) brought together diverse stakeholders involved in environmental research/ projects related to the selected theme for the financial year: “Integrated Waste Management in Gauteng Province, with a special focus on townships, informal settlements and hostels”. Having deliberated on the challenges and ongoing work to understand and address them, the symposium suggested various topics that future research should focus on, and then voted to establish a sense of priority. The topics that emerged as the top three were:

1. TISH waste streams and opportunities -waste value chain.
2. Obstacles to implementation and enforcement.
3. Collaboration for awareness and education across sectors.

As in previous years, this process provides valuable input for the prioritization of environmental research going forward.

#### **Links to Annexures**

1. [Presentations](#)
2. [Programme](#)
3. [Mentimeter](#)
4. [Podcast](#)
5. [Attendance Registers](#)
6. [Student Track](#)

