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GOVERNMENT NOTICES • GOEWERMENTSKENNISGEWINGS

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

NO. 1561 **03 DECEMBER 2019**

NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008)

CONSULTATION ON THE DRAFT REVISED AND UPDATED NATIONAL WASTE MANAGEMENT STRATEGY

I, Barbara Dallas Creecy, Minister of Environment, Forestry and Fisheries, hereby, under sections 6(5)(e) and 6(6), read with 72(1) and (2)(a), (b), (c) and 73(1) and (2) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (Waste Act), consult on the draft revised and updated National Waste Management Strategy, in the Schedule hereto.

The Waste Act came into effect in 2009. In terms of section 6 of the Waste Act, the Minister was required to, within two years from the commencement of section 6 of the Waste Act, by notice in the *Gazette*, establish a National Waste Management Strategy for the purpose of achieving the objects of the Waste Act. The Minister established the National Waste Management Strategy, which was implemented since 2011. Section 6(5) of the Waste Act stipulates that the National Waste Management Strategy must be reviewed by the Minister at intervals of no more than 5 years. Since 2017, the Department of Environmental Affairs has conducted a comprehensive review of the existing National Waste Management Strategy, and a draft revised and updated National Waste Management Strategy has been developed. The review of the National Waste Management Strategy was based on a four phase approach, which consist of the following: 1) The review of the 2011 National Waste Management Strategy; 2) A situational analysis; 3) Recommendations, and 4) A draft Revised and Updated National Waste Management Strategy.

Members of the public are invited to submit to the Minister, within sixty (60) days from the date of the publication of the notice in the *Gazette*, written comments or inputs on the National Waste Management Strategy to the following addresses:

By Post: The Director-General: Environmental Affairs
Attention: Mr Thabo Magomola
Private Bag X447
PRETORIA
0001

By hand: Ground Floor (Reception), Environment House, 473 Steve Biko Road, Arcadia, 0083

By Email: tmagomola@environment.gov.za

The draft National Waste Management Strategy can also be accessed at sawic.environment.gov.za, under "Draft documents for comment".

Any inquiries in connection with the notice may be directed to Mr Thabo Magomola at Telephone: (012) 399 9303/9828.

Comments received after the closing date may not be considered.

BARBARA DALLAS CREECY
MINISTER OF ENVIRONMENT, FORESTRY AND FISHERIES

environmental affairs
Department
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

National Wast
Management
Strategy

2019 Revised and Updated National Waste Management Strategy

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Abbreviations

COGTA	Department of Cooperative Governance and Traditional Affairs
CSIR	Centre for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DOH	Department of Health
DIRCO	Department of International Relations and Cooperation
DST	Department of Science and Technology
dti	Department of Trade and Industry
DWAS	Department of Water Affairs and Sanitation
HCRW	Health Care Risk Waste
IWMP	Integrated Waste Management Plan
IndWMP	Industry Waste Management Plan
NCPC-SA	National Cleaner Production Centre of South Africa
NWMS	National Waste Management Strategy
NEM: WA	National Environmental Management Waste Act, 2008, as amended in 2014
NPA	National Prosecuting Authority
PFMA	Public Finance Management Act
REDISA	Recycling and Economic Development Initiative of South Africa
SARS	South African Revenue Service
SAWIS	South African Waste Information System
Waste RDI	Waste Research, Development and Innovation (Roadmap)

Foreword

Fellow South Africans

I am very pleased to be introducing the Draft National Waste Management Strategy for public comment. How a country manages its waste is a fundamental indicator of the extent to which that society is functional and being managed in a sustainable manner, and the implementation of this strategy must have a positive impact on the lives of all South Africans.

This strategy is a revision and update of the 2011 strategy and builds on the successes and lessons from the implementation of that strategy. The NWMS provides government policy and strategic interventions for the waste sector that are intended to provide an enabling environment for the projects identified in the 2017 Chemicals and Waste Phakisa, part of a cross sector national planning process intended to identify and support the implementation of projects in each sector of the economy that will contribute to national goals for sustainable economic growth, job creation and social transformation.

Most importantly, the 2018 strategy has the concept of the "circular economy" at its centre. The circular economy is an approach to minimising the environmental impact of economic activity by reusing and recycling processed materials to minimise: (a) the need to extract raw materials from the environment; and (b) the need to dispose of waste. The circular economy is built on innovation and the adoption of new approaches and techniques in product design, production, packaging and use – industrial symbiosis, for instance, is a way of preventing waste in industrial production by redirecting by-products from one production process to serve as raw materials for another production process.

The strategy comes at a time when there is growing knowledge and awareness of the environmental consequences of human activity in relation to the climate and environmental pollution. The widespread impact of plastic packaging in our coasts, rivers and wetlands and the impacts is cause for great concern. The 2018 NWMS outlines a strategic approach to reduce littering and illegal dumping, and to reducing the production of single-use plastics such as food wrappers, disposable cups, and straws that are currently destroying our marine habitats.

The success of the 2018 NWMS depends on the extent to which it finds a foothold in local and provincial government and the private sector. But government and business can't solve our problems with waste on their own. Increasing recycling rates to promote the circular economy depends on consumer behaviour change, such as separating waste at source – something which all South Africans should be practising. The 2018 NWMS seeks to build on existing initiatives in schools and draw on community-based organisations and NGOs to help in cleaning up our communities and reducing the carbon footprint of our economy by correct disposal and recycling of waste.

The Department of Environmental Affairs looks forward to your comments on this important national strategy.

Regards,

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1 Introduction

The National Environmental Management: Waste Act of 2008 (NEM: WA) establishes the requirement for a National Waste Management Strategy (NWMS) to be implemented, and to be revised and updated, with the 2011 NWMS being the first NWMS to be formulated and implemented under NEM: WA. The NWMS is a government-wide strategy that applies to all organs of state that have a responsibility for waste management, the private sector, and civil society. DEA is responsible for developing the strategy in consultation with other spheres of government and all stakeholders.

The current document is a revision and update of the 2011 strategy that is published for public comment to inform the final strategy. This strategy takes into account progress, challenges and lessons learned from the implementation of the 2011 NWMS, as well as new social, environmental and economic developments and pressures affecting the waste sector.

The 2018 Revised and Updated NWMS is released for public comment together with a Status Quo Assessment of Waste Management in South Africa and a State of Waste Report that updates the National Waste Information Baseline Report of 2012. Together these documents provide the strategic context – including a review of the implementation of the 2011 strategy – and statistical evidence which inform the revised strategy.

Section 2 of the NWMS (Statement of the Problem) provides a succinct summary of the key issues facing the waste sector that the revised NWMS seeks to address. The overall strategic approach of the revised NWMS is described in section 3 (Waste Minimisation and the Circular Economy). The approach adopted to structuring strategic goals in the revised strategy differs significantly from the previous NWMS, in that it seeks to provide a simpler conceptual structure based on three main implementation themes framed as overarching goals and is informed by global emerging trends in the management of waste.

The central implementation themes around which the revised NWMS is structured are described in terms of strategic objectives and actions in Section 4 (Waste Minimisation), Section 5 (Effective and Sustainable Waste Services), and Section 6 (Waste Awareness and Compliance).

The draft strategy concludes with a section on Roles and Responsibilities, which represents a preliminary view of stakeholder responsibilities in relation to the implementation of the strategy. As an outcome of stakeholder engagement, the version of the strategy that is submitted for public comment will include a detailed implementation plan and monitoring and evaluation framework that will expand on the actions outlined in the strategy to provide implementation targets, timeframes and specify accountability and reporting arrangements. The final version of the strategy will include a costing of the implementation plan.

2 Statement of the Problem

According to the Draft 2018 State of Waste Report, in 2017 South Africa generated 42 million tonnes of waste, with only 11% being diverted from landfill. And 38 million tonnes of waste, of which only 7% was reused or recycled rather than being treated as disposed of. South Africa has a growing population and continues to experience urbanisation. These trends, coupled with growth in GDP, are associated with increases in waste generation. In the absence of aggressive strategies to avoid generating waste, the total volumes of waste generated will increase in future, which will in turn require greater effort in waste diversion simply to maintain the current rate at which landfill airspace is depleted which is already recognised as being unsustainable.

Approaching 47% of general waste consists of biomass and organic waste, making this the largest single waste type. The next single largest waste type, at 13%, consists of construction and demolition waste. While South Africa has made progress in relation to recycling paper, plastic, glass and metals there is still substantial scope to increase recycling rates. Furthermore, as the South African economy continues to develop, the relative importance of waste streams such as waste electronic and electric equipment (WEEE) will increase.

To a large extent, NWMS 2011 reflected a top-down, state-led approach to management and regulation of the waste sector as it was focused on supporting the various legislative mandates and regulatory mechanisms provided in NEMWA, such as the provisions around Integrated Waste Management Plans (IWMPs), provisions for contaminated lands, and Industry Waste Management Plans (IndWMPs).

Although implementation of the hierarchy of waste management practices informed NWMS 2011, progress in diverting waste from landfill has been limited. This represents a loss of economic opportunities in relation to waste and imposes significant costs on government in a context where landfill airspace is constrained in many parts of the country. Furthermore, it represents a failure to decouple economic activity from environmental impacts.

While NEMWA stipulates that the NWMS be reviewed and updated every five years, it also references the Polokwane Declaration which contains a long-term vision of a zero-waste society. This vision is articulated in the revised strategy in terms of a short term (within 5 years) goal for waste minimisation as well as projected medium term (within 10 years) and long term (within 15 year) goals.

While challenges in the implementation of NEMWA remain that will need to be addressed, in terms of waste minimisation the revised strategy will require a shift in focus to:

- supporting innovation and partnership with the private sector
- collaborating with other government departments around beneficiating waste, particularly the DST, DTI, DoE and DMR.

The revised strategy needs to be more specific in terms of objectives, targets and actions in relation to the different levels of the waste management hierarchy and particular waste streams. To date, the focus of waste diversion from landfill has been on recycling and while the country has achieved recycling rates that compare favourably to other developing countries, a relatively large percentage of waste continues to be disposed to landfill. To a large extent, the recycling industry is built on collection of recyclables by the informal sector and this creates policy challenges around livelihoods and norms and standards that need to be addressed in the context of political imperatives for radical

economic transformation and sustainable development while at the same time increasing recycling rates.

Figure 1: Waste Management Hierarchy

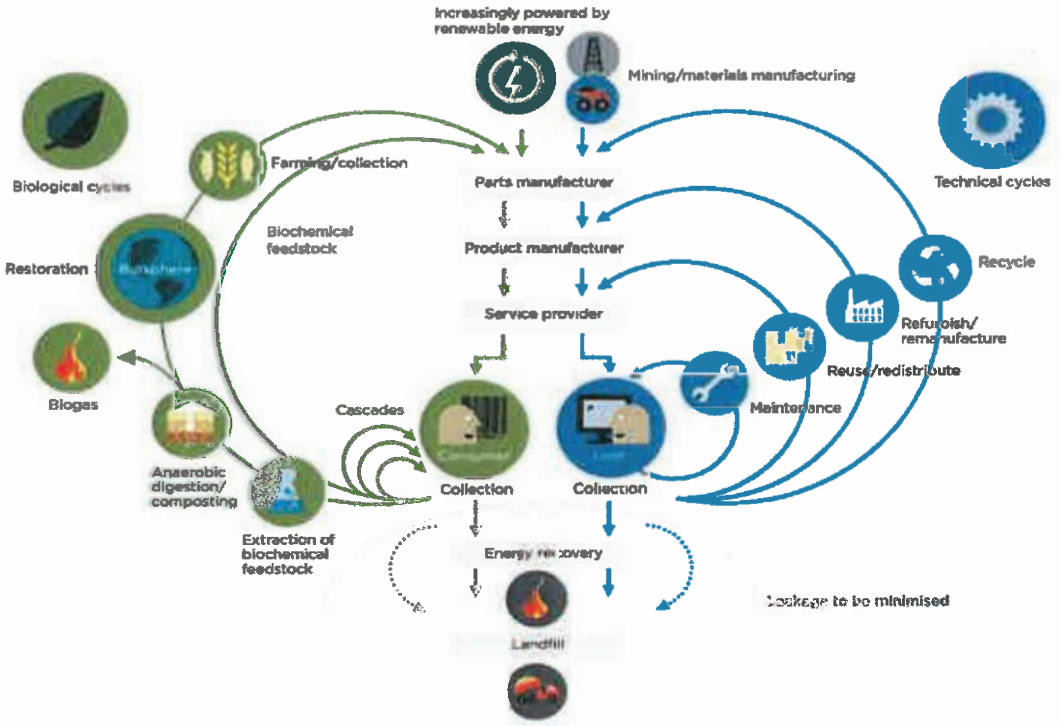
Waste minimisation opportunities in the hierarchy above and below recycling need to be more actively addressed in the revised strategy, particularly in relation to waste prevention and promoting alternatives to landfilling for organic waste such as composting and waste to energy.

Sustainable financing of waste management services and infrastructure by local government and compliance with national standards in relation to waste collection and licensing conditions in relation to disposal continues to be a challenge. There is a need to re-orient service delivery away from simply collection and disposal, and this will need a more practical approach to supporting local government in waste service delivery by national and provincial government. In particular, the approach to integrated waste management planning needs to better address the constraints and varying circumstances faced by local government.

Finally, the revised strategy needs to address deficits in relation to a national culture of compliance and public awareness that results in pollution and litter. On its own, legislation and policy are necessary but insufficient guarantors of a clean and pollution-free environment. Achieving this requires changes in behaviour and attitude around waste on the part of the public sector, private sector, and citizens.

3 Waste Minimisation and the Circular Economy

The concept of the circular economy is a useful way of understanding implementation of the waste management hierarchy in terms of its contribution to the green economy and the decoupling of economic activity from harmful environmental impacts. The circular economy consists of "closing the loop" between resource extraction and waste disposal by the application of waste avoidance, reuse, repair, recycling, and recovery throughout the economic cycle to minimise waste and reduce demand for virgin materials as production inputs, as illustrated in the diagram below.



The 2018 national waste management is based on two distinct strategic entry points to waste minimisation:

- Waste Prevention – this involves interventions designed to avoid and reduce waste before substances, materials and products are discarded i.e. before they become waste. This includes interventions around the design and packaging of products, cleaner production, and industrial symbiosis. In terms of the hierarchy of waste management practices, these interventions have the highest priority and should be the first to be applied to any waste stream. The main economic driver here is to avoid the costs to businesses and the public sector associated with waste collection and disposal.
- Waste as a Resource – this involves interventions designed to stimulate a secondary resources economy based on recycling and recovery of materials and energy from waste i.e. interventions that take place after a product or material has become waste. In terms of the hierarchy of waste management practices, recycling of waste for reuse and recovery of materials is prioritised over recovery of energy from waste. The main economic driver lies in exploiting the potential commercial value of waste.

Both waste prevention and management of waste as a resource form part of South Africa's strategy for waste minimisation and implementing the circular economy, resulting in the diversion of waste from landfill and the displacing of demand for virgin materials.

This revised NWMS is predicated on the insight that while waste is an environmental concern, it is also an important industry in which technology and innovation have a crucial role to play in creating a secondary resources economy. For this reason, the Department of Science and Technology (DST) and the Department of Trade and Industry (DTI) are critical partners in its implementation, as well as other departments with responsibilities and interests in relation to particular waste streams such as the Departments of: Agriculture, Forestry and Fisheries (DAFF); Mineral Resources (DMR); Water and Sanitation (DWAS); and Energy (DoE) and the Department of Public Works (DPW) as a facilities manager for most government real estate.

Efficient and innovative approaches to the delivery of waste services in relation to collection and disposal are critical to leveraging the economic value of waste through increased rates of reuse and recycling and the application of alternative waste treatment technologies such as composting and waste to energy. This requires municipalities to work more closely with private sector partners and the informal sector in separating and managing waste streams. It also needs to involve a greater focus on extended producer responsibility, particularly in relation to product design and packaging.

It unfortunately remains true that in general poor, black South Africans remain more likely to live in communities in which human health and dignity are impaired by litter and illegal dumping and that the working conditions under which many waste pickers contribute to recycling often do not represent decent livelihoods. Integrating the informal sector into municipal waste collection services as part of systems for separating waste at source is therefore a key priority for the revised NWMS.

In relation to waste services, an important issue highlighted in the Phakisa planning process for the chemicals and waste sector is the need for tighter integration between Industry Waste Management Plans and Integrated Waste Management Planning at the provincial and local level. One of the lessons learned from the 2011 NWMS is the need to recognise the very different constraints which different categories of local municipality experience in developing and implementing IWMPs, and the need for effective provincial planning, coordination and oversight of integrated planning in relation to waste management infrastructure. This is especially relevant since the boundaries of commercial viability for waste infrastructure do not necessarily mirror administrative boundaries. This calls for a more supportive role of provincial government in supporting municipalities.

While this revision of the NWMS recognises that progress towards a circular economy cannot be driven only based on a top-down, inflexible legislative regime, it is also the responsibility of the DEA to ensure that the regulatory regime for waste management is effectively enforced to protect human health, dignity and the integrity of the environment. The capacity and willingness to enforce waste regulations is a pre-requisite for creating a culture of compliance. At the same time, public awareness around safe disposal of hazardous wastes, littering and illegal dumping needs to complement extended producer responsibility in addressing the environmental damage caused by waste, such as marine plastics pollution, pollution of freshwater sources, and greenhouse gas emissions.

3.1 Summary of Revised and Updated Goals and Objectives

The 2011 NWMS revolved around 8 goals, each with one or more associated targets. This approach has been updated in the current strategy to focus on three overarching goals that are intended to articulate the core objects of the Waste Act. The targets associated with goals in the 2011 NWMS has

been replaced with a set of strategic objectives for each goal, which will be monitored in terms of performance indicators. The three strategic goals in the 2018 NWMS correspond to the following implementation themes:

- **Waste Minimisation** – the focus of this theme is on waste prevention and building a secondary resources economy around waste as a resource to achieve a more circular economy. The role of government here is primarily to create an enabling environment for the private sector that supports extended producer responsibility and waste beneficiation.
- **Effective and Sustainable Waste Services** – this focuses on the role of government, and particularly local government, in ensuring that citizens receive appropriate waste services and that the delivery of these services contributes to sustainable development.
- **Awareness and Compliance** – the focus of this goal is on managing the environmental impact of waste and preventing pollution through changes in behaviour and attitude that lead to a culture of compliance with local and international standards taking root amongst citizens, businesses and government.

The goals and associated strategic objectives for the 2018 NWMS are provided in the tables below, which reference to the relevant objects from NEMWA:

Table 1: Waste Minimisation

Goal 1	*Prevent waste, and where waste cannot be prevented, divert 50% of waste from landfill within 5 years; 65% within 10 years; and at least 80% of waste within 15 years through reuse, recycling, and recovery and alternative waste treatment.*
Strategic Objectives	Waste Prevention: • Prevent waste through cleaner production, industrial symbiosis, and extended producer responsibility • Prevent food waste by working with agricultural producers, retailers, the hospitality sector and consumers. Waste as a Resource: • Divert organic waste from landfill through composting and the recovery of energy • Divert construction and demolition waste from landfill through beneficiation • Increase recycling and recovery rates • Increase technical capacity and innovation for the beneficiation of waste
NEMWA	• minimising the consumption of natural resources; • avoiding and minimising the generation of waste; • reducing, re-using, recycling and recovering waste; • treating and safely disposing of waste as a last resort; • preventing pollution and ecological degradation; • securing ecologically sustainable development while promoting justifiable economic and social development;

2019 Revised and Updated National Waste Management Strategy

Table 2: Effective and Sustainable Waste Services

Goal 2	*All South Africans live in clean communities with waste services that are well managed and financially sustainable.*
Strategic Objectives	Waste Collection: • Implementation of the DEA separation at source policy to promote reuse, recycling and recovery of waste • Safe and environmentally sustainable disposable of hazardous household wastes. Integrated Waste Management Planning: • Provinces provide effective regional guidance and oversight in the development and implementation of metro, district and local municipality IWMPs within the context of overarching Provincial Integrated Waste Management Plans • All local authorities to include provisions for recycling drop-off/buy-back/storage centres in their IWMPs by 2020
NEMWA	• promoting and ensuring the effective delivery of waste services; • achieving integrated waste management reporting and planning;

Table 3: Awareness and Compliance

Goal 3	*South Africans are aware of waste and a culture of compliance with waste management norms and standards exists, resulting in zero tolerance of pollution, litter and illegal dumping.*
Strategic Objectives	• Reduction of littering and illegal dumping due to attitudinal shifts and greater public awareness of the environmental damage caused by waste • Enhanced capacity to enforce the Waste Act and International Agreements on waste and pollution • Municipal landfill sites and waste management facilities comply with licensing standards • All local authorities to include provisions for recycling drop-off/buy-back/storage centres in their IWMPs by 2020
NEMWA	• to ensure that people are aware of the impact of waste on their health, well-being and the environment; • to provide for compliance with the measures set out in paragraph (a) • generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being

These goals will be supported by an implementation plan that clarifies actions in the medium to long term supported by appropriate means of implementation. Effective implementation will largely depend on appropriate monitoring of waste quantities and tracing movement of waste in the value chain.

3.1.1 2011 NWMS Goals in Transition

Although the 2018 NWMS has adopted three overarching goals as the thematic focus for implementation, the strategic imperatives informing the 2011 NWMS goals have not been abandoned. The mapping of the 2011 goals to thematic goals in the 2018 Strategy is described below.

2011 Goal 1: Promote waste minimisation, re-use, recycling and recovery of waste

This is largely addressed under the thematic goal on waste minimisation (Goal 1) in the 2018 strategy, which has been revised and updated to address waste prevention as a component, including measures such as extended producer responsibility and industrial symbiosis.

2011 Goal 2: Ensure the effective and efficient delivery of waste services

The 2018 NWMS includes a goal on service delivery that builds on progress made in terms of the 2011 targets. Separation at source, which is dealt with under Goal 1 in the 2011 Strategy, is addressed as a service delivery issue in the revised strategy, while licencing of landfills is addressed as an issue of compliance.

2011 Goal 3: Grow the contribution of the waste sector to the green economy

This goal is now viewed as being an inherent outcome of sound waste management practice and the 2011 goal has been embedded throughout the strategy, with the environmental and socio-economic impact of activities for each objective being unpacked at a high level.

2011 Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment

In the 2018 strategy this goal is addressed as an aspect of improving levels of compliance with the Waste Act (Goal 3), with a focus on addressing the issues of littering and illegal dumping. This reflects the fact that while progress has been made in relation to the 2011 targets for running awareness programmes in schools and municipalities, littering and illegal dumping remain serious challenges.

2011 Goal 6: Achieve integrated waste management planning

In the 2018 NWMS, the 2011 targets for integrated waste management planning and reporting to SAWIS are addressed as an aspect of service delivery (Goal 2) in terms of strategic objectives relating to planning and reporting. The importance of provincial IWMPs and provincial oversight and reporting on local IWMPs is emphasised, as well as the need to improve the quality of waste sector information.

2011 Goal 7: Provide measures to remediate contaminated lands

The primarily administrative 2011 targets associated with this goal have largely been met through effective implementation of the contaminated land measures in the Waste Act. Consequently, further progress is treated as a matter of achieving awareness and compliance in the 2018 NMWS.

2011 Goal 8: Establish effective compliance with and enforcement of the Waste Act.

In the revised strategy, the objects of the Waste Act that the 2011 goal is intended to give effect to are primarily addressed in Goal 3, which links compliance and enforcement with awareness.

4 Waste Minimisation

The strategic goal for waste minimisation is:

> *Prevent waste, and where waste cannot be prevented, reduce the total volume of waste disposed to landfill by 50% within 5 years; by 65% within 10 years; and at least 80% within 15 years through reuse, recycling, and recovery and alternative waste treatment.*

In keeping with the Polokwane declaration, the long-term vision in relation to waste minimisation is for South Africa to become a zero-waste society. While this will not be achieved during the 5-year timeframe of the current NWMS, it is necessary to make real progress towards realising this vision.

According to NEMWA: "waste minimisation" is defined as:

> *"the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of"*

There are therefore two strategic entry points to South Africa's approach to waste minimisation:

1. **Waste Prevention** i.e. avoiding the generation of waste and avoiding toxicity in waste.
2. **Managing Waste as a Resource** i.e. beneficiating waste through reuse, recycling, treatment and recovery to reduce the amount and toxicity of waste that is disposed of.

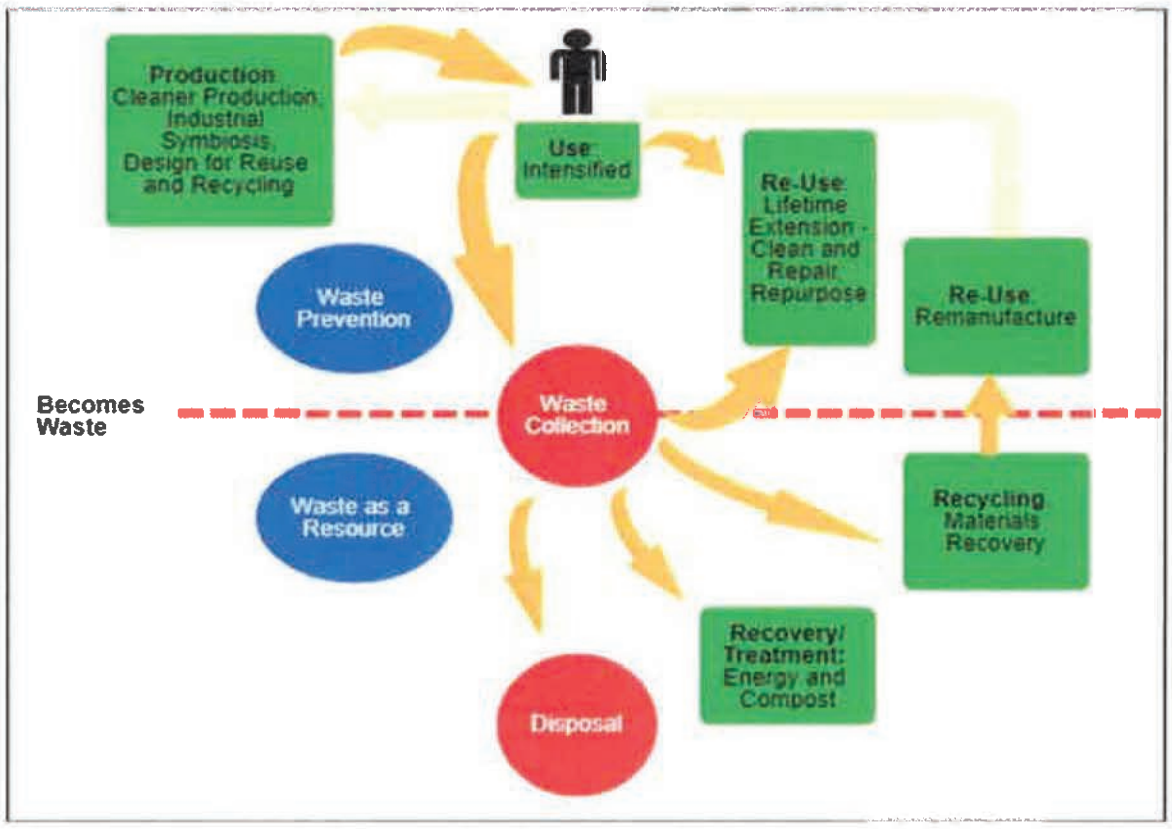


Figure 2: Waste Minimisation

Waste management principles and measures to support waste prevention include measures undertaken in resource extraction, production and manufacturing, retail and consumption that are primarily implemented and undertaken by the private sector.

Waste collection and disposal is a local government mandate, with domestic and commercial waste collection in many cases directly performed by the municipality and waste disposed to landfills operated by the municipality. In metros and secondary cities these functions might be subcontracted to waste management companies, with a few large privately-owned companies dominating the sector.

In the absence of formal systems for separation at source of recyclables, an informal sector comprised of waste pickers has emerged that contributes significantly to the collection of recyclables. These informal sector livelihoods are marginal, with many waste pickers being homeless or living in informal settlements, and in many cases living on or adjacent to landfills (SOWR, 2018). While there is some informal reuse, the processing of recyclables for reuse in manufacture is undertaken as a formal private sector activity and buy-back centres that purchase recyclables from waste pickers are generally run as formal businesses. Consequently, the secondary economy around waste as a resource involves both informal and formal actors.

The objectives and actions outlined for this goal focus particularly on collaboration and partnership between national government and the private sector. Waste minimisation is primarily accomplished by the private sector on the basis of opportunities to generate revenue from reusing and recycling waste or to reduce production costs by avoiding waste or substituting recycled and recovered materials for virgin materials where recovered materials are less expensive. Government – and particularly local government – has a constitutional mandate to ensure the safe and effective collection and disposal of waste, and the collection of waste and operation of landfills is currently frequently undertaken directly by local government as a public service.

The waste sector is dynamic, with new technologies and opportunities for innovation frequently emerging, which an overly rigid approach to regulation can stifle or unnecessarily delay. The approach of government is to partner with the private sector in co-regulation of waste streams wherever appropriate, and to create an enabling environment for innovation and entrepreneurship in the sector. This includes ensuring coherent alignment of policy and regulations across the different government departments that impact on the management of waste in different sectors with the intention to simplify, consolidate and accelerate processes for environmental authorisations and remove unnecessary bureaucratic hurdles.

Minimisation priorities for General waste streams

Table 4 below indicates the various types of waste as per NEMWA classification system and the total tonnages that are handled in the country.

Table 4: General waste by management option in 2017 (SOWR, 2018)

Waste type		Estimated tonnes	Imports	Exports	Recycling / recovered	Landfilled	LoC
GW01	Municipal waste	4 821 430	2	4	0.0%	100.0%	
GW10	Commercial and industrial waste	3 550 505	0	0	10.0%	90.0%	
GW 20	Organic waste	30 499 455	4 045	298	31.1%	68.8%	
GW30	Construction and demolition waste		0	0	90.0%	10.0%	
GW50	Paper	4 482 992	58 548	129 375	58.0%	42.0%	
GW51	Plastic	2 211 225	6,804	20 947	43.7%	56.3%	
GW52	Glass	1 113 362	39 928	11	78.4%	21.6%	
GW53	Metals	2 492 636	27 976	68 192	75.0%	25.0%	
GW54	Tyres	4 035 929	0	0	100%	0%	
GW99	Other **	729 615	0	0	9.1%	90.8%	
	TOTAL	54 175 147	137 490	258 557	38.6%	61.4%	

*Note that darker shading indicates the highest level of confidence (LoC) in the information used, whereas the lighter shading indicates a lower confidence level.

As shown above, organic waste contributes to more than 56% of the total of general waste in the country and has a relatively low recycling rate of 31%. This waste stream should therefore be prioritised for waste prevention and diversion from landfill. According to WWF figures included in the SOWR, almost one third of all organic waste consists of food waste.

While there is certainly room for improvement, in comparison with many other developing countries South Africa has relatively high rates of recycling for paper, plastics, glass, metals and tyres. Plastic has the lowest recycling rate and is also associated with significant environmental impacts. Plastic pollution of the coastal and marine environment is an issue of particular concern, with much of this derived from single-use plastic used in consumer packaging.

Although construction and demolition waste is a relatively large waste stream numerous reuse options have been identified, and a certain amount of the waste is used as landfill cover. Nevertheless, in some municipality's landfills may receive significantly more of this waste stream than is required for landfill cover, and it also frequently subject to illegal dumping.

Minimisation priorities for Hazardous waste streams

Hazardous waste streams are not only be prioritised in terms of their volume, but also in terms of their toxicity and the environmental risks associated with their treatment and disposal. Asbestos, oils, mercury, lead, Health Care Risk Waste (HCRW) and persistent organic pollutants (POP) are of special concern in relation to toxicity and environmental risks. South Africa generated almost 67 million tonnes of hazardous waste in 2017 and over 93% of that was landfilled. Figure 2 below indicates the % contribution of each category of hazardous waste to the total volume.

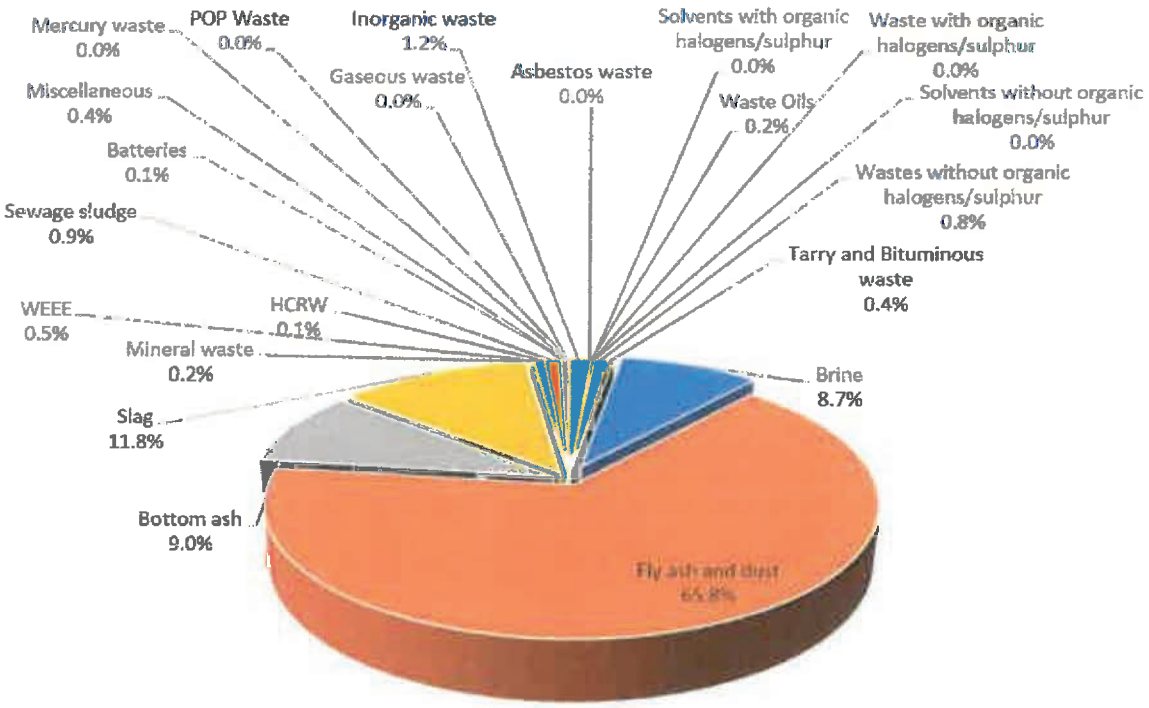


Figure 3: Hazardous waste by management option in 2017 (SOWR, 2018)

Waste prevention is therefore a priority in relation to hazardous waste, both in terms of amount and toxicity of waste that is disposed to landfill.

By far the biggest contributor to hazardous waste by tonnage is fly-ash at almost 66% of the total, together with bottom ash (9%), wastes from the generation of electricity from coal contribute 75% of the total volume of hazardous waste. At the same time, significant opportunities exist for the beneficiation of fly-ash. Slag and Brine are waste streams of concern both in terms of tonnage and environmental risks.

Although the tonnage of Waste Electrical and Electronic Equipment (WEEE) is relatively low at approximately 360 000 tonnes, recycling rates for WEEE were less than 10% in 2017. This contrasts with lead acid batteries where measures to support extender producer responsibility have been in place for some time, and much lower rates of disposal to landfill are achieved. This is of concern since WEEE is the fastest growing waste stream in volume, and it includes reusable components and materials that are both potentially economically valuable and environmentally harmful.

4.1 Waste Prevention

In terms of the hierarchy of waste management practices, waste prevention interventions have the highest priority and should be the first to be applied to any waste stream. The main economic driver for waste prevention is the avoidance of the costs to businesses and for the public sector, especially local government, the economic driver is to reduce costs associated with waste collection and disposal.

Waste prevention involves interventions designed to avoid and reduce waste before substances, materials and products are discarded i.e. before they finally become waste. This includes interventions

around the raw material selection, design and packaging of products, cleaner production, and industrial symbiosis. Cleaner production aims to reduce environmental impact through the manufacturing process to end of life, whilst industrial symbiosis enables companies to exchange by-products as raw materials. In this case, waste of one company is a resource for another.

The following are important enablers for the development and implementation of effective waste prevention policies, action plans and initiatives:

- Measures to support public and private investment in Extended Producer Responsibility that involve producers taking physical and/or financial responsibility for products post consumption to prevent their disposal as waste.
- Incentives to motivate behaviour change, particularly the internalization of social and environmental costs of waste to ensure producers and consumers take responsibility for preventing waste.
- Environmental awareness amongst consumers and producers in relation to product design and raw material selection, manufacture, use and end of life.
- Strong institutional arrangements that can evolve decision-making processes through increased collaboration and consultations with key stakeholders in government, the private sector, research institutions, and civil society supported by a bedrock of scientifically generated data and methodologies.
- Efficient dissemination of new, growing information to both public and private actors that help reveals the benefits of waste prevention actions, including cost-savings, and avoided costs.

Apart from lack of awareness, factors that impede waste prevention include:

- lack of incentives to motivate action in manufacturing processes;
- lack of data on waste streams;
- commercial pressure to shorten innovation and product development cycles; and
- the extent to which a general perception exists amongst consumers that products containing recycled or reused content are of lower quality than those produced from virgin materials.

The Waste Act provides for the commissioning and approval of Industry Waste Management Plans (IndWMPs) plans as tool for promoting the implementation of waste management hierarchy in relation to particular waste types and generators. IndWMPs are particularly important as a means of implementing Extended Producer Responsibility.

4.1.1. Prevent waste through cleaner production, industrial symbiosis, and extended producer responsibility

The National Cleaner Production Centre of South Africa (NCPC-SA) is government's national programme to promote the implementation of resource efficiency and cleaner production methodologies to assist industry to lower costs through reduced energy, water and materials usage, and waste management. It is hosted by the Centre for Scientific and Industrial Research (CSIR) on behalf of the Department of Trade and Industry (the dti).

As a key component of resource efficiency and the prevention of waste in industry, the NCPC-SA is active in promoting industrial symbiosis. Provincial industrial symbiosis programmes have been established in the Western Cape, Gauteng and KwaZulu-Natal and industrial symbiosis needs to be prioritised in the development of South Africa's Industrial Development Zones.

The NCPC-SA provides industry with opportunities for training, knowledge sharing and access to technical expertise as well as serving to facilitate communication between companies and sectors in order to identify business partnerships that keep resources in production cycles that avoid waste, thereby implementing the concept of a circular economy.

To further facilitate waste prevention by industry, the 2014 Amendment to the Waste Act includes provisions and a mandate for the establishment of a Waste Bureau. The functions of the Bureau include:

- Disbursing incentives derived from waste management charges and the implementation of industry waste management plans (for instance, waste management levies charged on products)
- Monitoring implementation of Industry Waste Management Plans and the impact of incentives and disincentives.
- Providing specialist support and advice for waste management plans, tools, instruments, processes, systems, norms, standards and capacity building programmes.

The Waste Bureau will be responsible for monitoring IndWMPs and will be suitably capacitated to perform all its mandated functions. As part of its functions, the Bureau facilitates implementation of Extended Producer Responsibility (EPR) and ensure that this is embedded in Industry Waste Management Plans for the recovery and recycling of waste streams that are of concern, due to either because of their volume or toxicity. The objective of EPR schemes is to prevent the targeted products and materials from being disposed as waste.

In 2018, the Minister for the Environment has called Industry Waste Management Plans to be developed and submitted for approval for the following waste streams:

- Waste Electronic and Electrical Equipment
- Paper and Packaging, including the subsectors for plastic, metal and glass packaging
- A number of Industry Waste Tyre Management Plans have been submitted and released for public comment.
- Lighting equipment

These IndWMPs will include measures to support EPR coupled to targets for reducing the volume and toxicity of wastes in the affected industries.

In implementing the NWMS, the DEA will collaborate with the Department of Trade and Industry (DTI) and the NCPC-SA, particularly in relation to the co-development with the private sector of IndWMPs with the Waste Bureau to ensure that the concepts and practices of cleaner production, industrial symbiosis and Extended Producer Responsibility are embedded in these plans

4.1.2 Prevent food waste

The main drivers for food waste include population growth and urbanisation, which require both increased agricultural production and more complex distribution, processing, and retail value chains to be in place. Changes in diet and food preferences in middle-income countries such as South Africa tend towards more resource intensive production. One of the challenges to prevention of food waste is the fact that it is not recognised in the general classification of general waste and is therefore not reported or accounted for. Other constraints include lack of capacity and awareness on the impact of food waste and the disparity in service between urban and rural areas.

About one third (33%) of food produced for human consumption is lost or wasted. Approximately half (50%) of these losses take place during harvesting, with processing, packaging, distribution and retail accounting for a further 45% of wasted food – the remaining 5% of food waste is the responsibility of consumers.

The impact of food waste includes waste of resources such as water and energy through the supply chain, socio economic impact in respect of food security; it is estimated that 26% go to bed hungry and environmental impacts associated with waste and emissions of harmful gases.

The DEA will collaborate with stakeholders to develop a strategy for reducing food waste:

- The Department of Agriculture is a key stakeholder in relation to food losses at the point of harvesting.
- The food processing and transport industry, which to some extent are vertically integrated with the retail industry are key stakeholders in relation to food losses during transport, processing and distribution.
- The retail sector and consumers are key stakeholders in relation to food losses at the point of purchase and in the home or catering industry, particularly in relation to "ugly" fruits and vegetables e.g. misshapen or discoloured fruits and vegetables which currently are currently resisted by consumers. The labelling and marketing of perishable foods needs to be reviewed to reduce consumer uncertainty.
- The Department of Health is an important stakeholder in relation to food safety and the distribution of surplus foods in terms of reducing the actual risks to consumers, as well as the perception of risk on the part of retailers and the hospitality and catering industry to participation in schemes for the distribution of surplus foods.
- Apart from anaerobic digestion, there are a number of commercially viable biological treatments of food waste, such as its use as feedstock for insect larvae, which can then be processed as a protein source.

The DEA will undertake a study to determine the feasibility of declaring food waste a priority waste and issuing a call for one or more Industry Waste Management Plans.

4.2 Waste as a Resource

South Africa is experiencing severe constraints in terms of the availability of landfill space, as well as challenges in operating and decommissioning landfills in a manner that is compliant with licensing conditions. Commissioning and operating new landfills is a significant cost for local government and is often resisted by communities neighbouring potential sites. Furthermore, once disposed of to landfill, waste is no longer economically productive, and, in the absence of landfill gas capture, landfills generate methane – which is a potent Greenhouse Gas.

For these reasons, diverting waste from landfill is a key imperative for the country's NWMS. South Africa's strategy for diversion of waste from landfill is based on building a secondary resources economy around the beneficiation of waste as part of the circular economy through recycling paper, glass, plastics, and metals and recycling and recovery of construction and demolition waste to substitute recycled content for virgin materials, the treatment and recovery of soil nutrients and energy from organic waste by composting and energy recovery.

Due to the large quantities of organic waste currently disposed to landfill, composting and Waste to Energy projects have a potentially important role to play in diversion. The least problematic waste to energy projects are likely to involve organic waste, and the generation of biogas through anaerobic

digestion is a particularly important technology in this regard. While there may be opportunities for alternative waste treatments that can be applied to plastics and other waste streams, such as pyrolysis and incineration, in general, recycling is the preferred waste management practice for these waste streams.

4.2.1 Increase recycling and recovery rates

South Africa already has relatively high recycling rates paper, glass, metals and plastics, but these can be further improved – particularly by expanding the collection of recyclables in secondary cities, small towns and rural municipalities. The main obstacles to accomplishing this are:

1. Distances from recycling companies able to process recyclates, which impacts on the commercial viability of buy-back centres
2. Lack of infrastructure and finance for separating at source, storing and transporting recyclables in smaller towns and rural municipalities

These challenges can be mitigated through coordination and planning of waste streams and infrastructure at a district and provincial level but are likely to require a level of subsidy through extended producer responsibility measures and, in the case of local government infrastructure, fiscal support from National Treasury in the form of a conditional grant.

As an outcome of the Chemicals and Waste Phakisa, several opportunities relating to particular waste streams including mining and energy wastes and electronic waste have been identified for development.

4.2.2 Divert organic waste from landfill

Organic waste represents the largest single waste type by volume in South Africa, is a potentially significant economic resource. A strategic priority in relation to this waste stream is energy recovery – particularly through the production of biogas from anaerobic digestion. The legacy of organic waste already disposed to landfill means that there is also considerable untapped potential for the recovery of biogas (also known in this context as landfill gas) from existing landfills, which can be used to generate electricity or treated and upgraded to the standard of compressed natural gas (CNG) and as a transport fuel. Transport fuels is the most cost-effective when used to fuel municipal waste fleets, which can potentially be retrofitted for this purpose. This model is well established in many European countries. Further, significant volumes of organic waste can be diverted from landfill through composting, both through large scale commercial operations and community level initiatives, which can be linked to job creation and food security initiatives involving market gardens.

4.2.3 Divert construction and demolition waste from landfill through beneficiation

Construction and Demolition (C&D) is currently used as landfill cover, however it represents the second largest waste type. Many local municipalities experience volumes of C&D well in excess of their requirements. Several alternatives to disposal already exist for this waste including crushing and recycling it to create bricks or use as aggregate in the construction of roads. The acceptance of industry standards for these products facilitates their uptake.

4.2.4 Increase technical capacity and innovation for the beneficiation of waste

Innovation in the waste sector consists of technological innovation in relation to industrial processes to prevent waste, promote industrial symbiosis, and increase recycling rates as well as innovation in

the conceptualisation, planning and delivery of waste services that reduce costs and encourage job creation and economic growth through the beneficiation of waste.

The Department of Energy and the DEA are currently in the process of preparing policy positions on the recovery of energy from waste. To facilitate the uptake of methodologies and appropriate technologies for this these processes needs to be aligned, with Waste to Energy being primarily the mandate of the Department of Energy in terms of the Waste Act, which does not include a mandate for the regulation of waste to energy projects. The DEA's concern is primarily with the feasibility of waste to energy projects in relation to the waste management hierarchy, which prioritises waste prevention, reuse and recycling

The Waste RDI Roadmap facilitated by the Department of Science and Technology (DST) and the Technology and Innovation Agency (TIA) promote research and innovation in the waste sector. There is a need for these agencies to coordinate with the DEA to mitigate unnecessary regulatory hurdles to innovation where these are encountered.

While glass and metals do not lose quality during recycling, paper and plastic can only support a limited number of cycles. To minimise the disposal to landfill, it is necessary to have some level of energy recovery and plastic has a high calorific value that makes it suitable for several energy recovery applications. In relation to the Industry Waste Management Plans in the packaging sectors, there is also an urgent need to research the feasibility and desirability of biodegradable alternatives to plastic for single-use applications.

There is a general shortage of civil engineers and scientists specialising in waste management in this country, and there is a need not only to increase the number of waste engineers working in local government, but to ensure new engineers receive mentoring and support. The Waste RDI Roadmap initiative is working with tertiary institutions to address this gap.

5 Effective and Sustainable Waste Services

While implementation of the 2011 NWMS has seen some improvement in waste collection and disposal services, including a successful programme to license landfills and the initiation of separation at source programmes in some metropolitan areas, significant backlogs in the delivery of waste services remain, and these backlogs tend to reflect historical inequalities – being particularly acute in informal settlements and rural or peri-urban communities. DEA has reported that South Africa faces the following challenges with respect to waste management;

- Littering and illegal dumping
- Low levels of separation at source
- Lack of infrastructure for recycling
- Lack of a recycling culture
- Backlogs in waste service delivery.

For the purposes of the revised NWMS, the overarching goal statement for waste services is articulated as:

> *All South Africans live in clean communities with waste services that are well managed and financially sustainable.*

The revised strategy for waste services seeks to address the reality that many if not most local government authorities are currently struggling to simply maintain basic service levels and that there is relatively little technical or financial capacity outside the metros to leverage service delivery to support beneficiation of waste. Furthermore, economies of scale and distance mean that in the absence of provincial and national intervention, it is often difficult for smaller and more rural municipalities to unlock value within the waste streams for which they are responsible, underscoring the need for a regional approach to planning and accounting of the full costs of waste management led at the district and provincial level. Currently, most municipalities implement the least cost method of collection and disposal as a minimum requirement and find it difficult to implement an integrated waste management system as per the waste hierarchy.

The revised strategy also seeks to address the fact that there is a real need for behavioural and attitudinal shifts in relation to litter and illegal dumping, and greater awareness of the environmental hazards and impact of waste. In implementing the revised strategy there is a need recognise and address the very different circumstances and waste management challenges that exist between and within local government authorities. Challenges with waste infrastructure and delivery of waste collection services and the problem of litter and illegal dumping are very different in densely settled rural areas and sparsely populated rural areas and differ greatly between middle-class suburbs and informal settlements. There is a need to shift resources towards where they are most needed and adopt flexible approaches to service delivery that incorporate the informal sector while addressing local needs.

5.1 Integrated Waste Management Planning

Achieving the desired shift in focus for municipal services from collection and disposal to separation at source and waste beneficiation, is predicated on integrated waste management planning. South Africa's strategy for integrated waste management planned is informed by the recognition that while local authorities are responsible for ensuring that waste is collected in adherence to national norms

and standards, diversion of waste from landfill, as well as sustainable operation of MRFs in many cases may require planning and financing at a regional level and private sector investment.

Transport represents a major cost in waste management and impacts significantly on the commercial viability of recycling and beneficiation. While waste streams in the metros may be of sufficient scale to support the collection and processing of recyclables, in local municipalities these volumes may be harder to achieve, requiring transport of recyclables over distances that require some incentive or subsidy to be in place to be commercially viable.

These issues can be mitigated by regional planning of waste management infrastructure such as landfills with Materials Recovery Facilities and drop-off centres, but this requires a recognition of the fact that local municipalities' transport costs for waste increase the further they are located from a regional landfill, and municipal budgets may need adjustments to accommodate this.

5.1.1 Ensure effective integrated waste management planning

The Waste Act requires all provinces to have integrated waste management plans in place, but during the implementation of the 2011 NWMS only partial progress was made in achieving this requirement. Generally, there is a need for greater clarity and guidance on the role of provinces in relation to integrated planning, review and monitoring of metro and local government integrated waste management plans and reporting requirements to national government.

As part of implementing the 2018 Strategy, all provinces are to have 5-Year Provincial Integrated Waste Management Plans approved by the Minister and in place by 2020 as per the requirements of the Waste Act, to be reviewed on an annual basis and against which they will report to DEA annually. These annual reports will include aggregated data on provincial waste streams, service delivery and infrastructure rolled up from local and metro IWMPs. A key purpose of the plans will be to guide public investment, and partnerships with the private sector, in waste management infrastructure and projects that would otherwise be difficult to accomplish at the scale of local or even district government.

The DEA will collaborate with SALGA, SACN, the Waste RDI Roadmap and Waste Bureau to develop and annually update a waste management planning reference guide and online knowledge-sharing platform that will include planning tools and guidelines, models and case studies. It will include content that is tailored to the diverse range of provincial and local government institutions and circumstances represented in the country.

5.1.2 Local authorities to provide recycling drop-off/buy-back/storage centres

The DEA through the Waste Bureau needs to engage with National Treasury in relation to making provision for a fiscal transfer mechanism such as a conditional grant for financing public investment in drop-off/buy-back centres, although the exact nature of the mechanisms will be influenced by any levies or other EPR measures that form part of the industry waste management plans. Further to this, there is a need for alignment between IWMPs and IndWMP to enhance implementation of EPR and the circular economy in identified waste streams such as for the packaging industry, which encompasses paper, tins and other metallic packaging, bottles, and plastic packaging should include measures for extended producer responsibility.

The Waste RDI Roadmap is to support provinces and the private sector in planning recycling infrastructure based on modelling of waste volumes and transport costs, within the context of a full

cost accounting of waste services and infrastructure that considers social and environmental costs and benefits.

5.2 Waste Collection

There is a need to intensify waste collection due to population increase and urbanisation, technology advances and changes in consumption patterns, which affect both the volumes and types of waste generated. Norms and standards for the collection of domestic waste were established in terms of the Waste Act and informed NWMS 2011. The challenge for the revised strategy is not only to achieve and surpass the service delivery targets set out in NWMS 2011, but to leverage waste beneficiation to improve the sustainability of service delivery in the long term.

5.2.1 Separate waste at source

Separation at source consists of separating waste into similar waste streams or categories for separate collection. This can be done by use of separate bin services or Kerbside collections, or through direct delivery of specific wastes to drop-off facilities. Waste separation may be conducted for any waste, including municipal solid waste, commercial and industrial waste, and construction and demolition waste. The benefits of separation at source include:

- Provision of more homogenous and higher value waste streams, allowing for better resource recovery
- Reduces contamination of waste streams
- Support the diversion of waste from landfill

Various waste reduction strategies have been attempted in most cities and countries in the field of municipal solid waste integrated management. The key to the success of such strategies has generally been found to be source separation – it is considered an effective means of reducing waste and enhancing recycling. Achieving successful waste separation at source depends on:

- Willingness and good practices among residents
- Market acceptance and incentives for the parties involved i.e. the consumers, investors and businesses
- Technology acceptance with respect to facilities and infrastructure that encourage the residents to adopt waste separation behaviour.

The waste RDI has noted the following as major obstacles for separation at source:

- A lack of end-markets for certain recyclables as a consequence of constraints in manufacturing capacity, and markets are subject to global economic trends and cycles.
- Linked to this, there are a limited number of recycling processors and Waste to Energy companies, and geographical and demographic constraints on the economies of scale needed to achieve commercial volumes of recyclables.
- Landfilling may be a cheaper option in the short term.
- Policy, legislation and regulation is either overly rigid, not implemented in the way it was intended or contains loopholes that lead to unintended consequences.
- Lack of implementation, monitoring of, and reporting on waste management plans by local government and industry, linked to a lack of reliable data on waste streams in terms of types and volumes.

The 2018 NWMS promotes separation at source through a concerted effort to raise public awareness and increase government and private sector investment in the delivery of infrastructure and services

such as kerb-side collection, drop-off centres and buy-back centres linked to a national awareness campaign around recycling, Industry Waste Management Plans, and where feasible, economic incentives. This will need to be tailored to the different circumstances experienced by communities. There is scope for innovation and a variety of different models and tools to be developed for engaging the informal sector (waste pickers) in the delivery of waste collection services that accomplish separation at source.

The DEA together with the Waste Bureau, the DST and Innovation Hub, through the Waste RDI Roadmap need to be able to support local government planners and industry in supporting capacity development in waste innovation, disseminating information about new approaches and sharing lessons learned, leveraging existing forums such as the Waste Khoro and Provincial and Municipal Infrastructure where possible.

5.2.2 Safe disposal and recycling of hazardous household wastes and absorbent hygiene products

Hazardous waste is waste that has substantial or potential threats to public health or the environment. Hazardous waste management is a complex interdisciplinary field that continues to grow and change as global conditions change. Currently, guidelines issued by the Ministry of Health for the management of medical waste are in place, although capacity to implement them in hospitals and clinics is uneven. Biomedical waste is expected to be disposed through incineration; however some finds its way to the municipal landfill sites, illegal dumps and within sewage systems. Inadequate knowledge and societal habits and attitudes still dictate against hazardous waste management; current hazardous waste disposal in home health care needs better regulation and greater public awareness.

Absorbent hygiene products, particularly disposable infant diapers, represent a growing problem in relation to household waste disposed to landfill. Not only are they significant in terms of volume and the amount of time they take to degrade, but they represent a potential vector for the transmission of infectious diseases, particularly in unlined landfills and to waste pickers and are frequently dumped illegally. Potentially, these risks can be mitigated both through product design measures and through recycling and alternative waste treatment options. Recycling of diapers requires consumer awareness and measures to separate these products at source which may be difficult to achieve in some circumstances.

6 Compliance and Awareness

A key element of the national strategy involves mitigating and preventing the environmental and social damage caused by waste due to non-compliance with local and international legislation and standards and littering and illegal dumping of waste. The country's strategic goal in relation to pollution and compliance is:

> *Mainstreaming of waste awareness and a culture of compliance resulting to end pollution, litter and illegal dumping*

The strategic approach to this goal is based on improving the visibility and effectiveness of enforcement of local legislation and international agreements and raising public awareness of the environmental damage caused by waste coupled with delivery of effective waste management services and environmentally compliant infrastructure.

It is a well know phenomenon that where there is poor municipal management of litter, a perverse incentive exists for residents to continue to litter. Breaking this cycle requires a combination of factors that include:

- Infrastructure – for instance, access to municipal skips to discourage illegal dumping, the presence of public bins that are regularly emptied, and municipal cleaning of streets, particularly in commercial districts.
- Enforcement – consistent implementation of by-laws (and failing that, national legislation in the form of the Waste Act) around littering and illegal dumping.
- Awareness and community participation – national and local media, outreach to schools and community-based organisations through clean-up campaigns (particularly around sensitive areas such as the coast, rivers and wetlands, and recreational areas such as parks), and in metros, involvement of Metro Improvement Districts.

The strategic objectives to support the goal of preventing pollution and achieving compliance are described in the sections below.

6.1.1 Reduce littering and illegal dumping

Measures to address litter and illegal dumping should be included in all integrated waste management plans and should include targeted awareness and community participation in waste management and prevention of littering. This can leverage national media and a national budget in DEA that is available for community-based initiatives around litter and illegal dumping and is focused on micro-grants for equipment and training.

This will support infrastructure development, improvement of services and enforcement to shift attitudes and community ownership.

Marine and coastal plastic pollution is of concern in terms of the environmental impact. The DEA will build on existing stakeholder initiatives to raise awareness and engage communities in and around riparian and coastal environments as well as the business community.

6.1.2 Enhance capacity to enforce the Waste Act and International Agreements

Currently while the number of Environmental Monitoring Inspectors (EMIs) in the country exceeds the target stipulated in the 2011 NWMS, very few of these are dedicated to enforcing the Waste Act. The DEA will seek to not only increase the number of EMI's actively involved in enforcing the Waste Act,

but will clarify the mandate and duties of local authority EMIs in respect of the implementation of NEM:WA to allow national and provincial EMIs to enhance and assist implementation at local authority level. Further, local authority EMIs should report on their compliance and enforcement activities with respect to NEM:WA non-compliance.

While the overall approach of government is one of co-operative regulation with industry, the national capacity that exists within DEA to support local EMIs to undertake enforcement in relation to high profile, complex waste related contraventions, should be strategically leveraged–to contribute to create a culture of compliance in the business community.

Currently legislation around littering has been challenged for being disproportionate in that it potentially results in criminal convictions. The distinction between littering and illegal dumping needs to be clearly defined in law with reference to the type and volume of waste: i.e. the illegal disposal of hazardous waste or waste above a certain volume is illegal dumping, and therefore a crime – otherwise littering should be punishable as a misdemeanour by means of an admission of guilt and fine, without triggering a criminal record. Existing Standard Operating Procedures between the South African Police Service (SAPS), Metro Police and the Environmental Management Inspectorate need to be realigned accordingly.

The DEA will work with the Department of Transport in respect of enforcement and compliance on transportation of waste including transboundary movement and in promulgating regulations on the import and export of waste. Further to this, DEA will continue to support municipalities in the development of by-laws and support implementation and enforcement through health inspectors or metro police department where they exist.

6.1.3 Ensure municipal landfill sites and waste management facilities comply with licensing requirements

While the 2011 NWMS was successful in achieving targets relating to the licensing of landfills, many landfills currently do not operate in compliance with their licensing conditions, particularly where landfills are owned and operated by local government (SOWR,2018). While in some cases non-compliance may be largely administrative – for instance, failure to undertake audits – in other case it may have more serious consequences, such as failure to record quantities using mechanisms such as working weigh-bridges, or failure to ensure that landfills are properly fenced.

Failure to comply often needs to be understood within the context of many local municipalities experiencing severe constraints in terms of finances and skilled human resources. In these cases, financial penalties applied to the local municipality may be counter-productive. At the same time, there needs to be effective monitoring and enforcement to ensure that financial assistance allocated towards waste infrastructure development and maintenance is not misappropriated.

In conjunction with COGTA, SALGA and NT, the DEA will develop a national strategy for addressing non-compliant municipal landfill sites that includes the application of fiscal support measures, potentially including a landfill tax intended to generate revenue for improving compliance and monitoring and developing alternatives to disposal to landfill.

7 Implementation Plan

The implementation plan consists of:

- A monitoring and evaluation framework that includes a description of reporting arrangements for implementation of the NWMS.
- A concise summary of the actions and interventions envisaged to support achievement of the strategic objectives for the waste management goals that includes targeted outcomes in relation to the strategic objective, and performance indicators and timelines for each action.
- A description of roles and responsibilities for implementation of the NWMS
- A description of supporting initiatives with respect to information management and financing of the NWMS
- A communications strategy for the 2018 NWMS

Where relevant, targeted outcomes for the 2018 NWMS use the 2018 State of Waste Report as the baseline. For instance, this means that the target for reducing waste disposal to landfill by 50% within 5 will be measured against the total volumes of general and hazardous waste disposed annually in 2017 as recorded in the 2018 State of Waste Report.

7.1 Monitoring and Evaluation Framework

Whilst the Waste Act requires that the National Waste Management Strategy be revised every 5 years, there need to be reporting systems in place that ensure progress against the NWMS can be reviewed on an annual basis – and where necessary, adjustments made to targets or actions based on new information or new developments within the sector.

Provinces should be reporting to the department annually on progress in relation to the implementation of provincial IWMPs, and these reports should in turn reflect progress in the implementation of IWMPs by local government, who report annually to the relevant provincial MEC. As part of the implementation of the 2018 NWMS, SAWIS will develop guidelines for provinces and local government on the content and format of annual reporting on IWMPs.

The DEA, through the Waste Bureau, is responsible for monitoring the implementation of IndWMPs, and the reporting requirements for these plans should be aligned with SAWIS. Effective reporting on the implementation of IWMPs and IndWMPs should provide a steadily improving picture of the status and outcomes of both private and public investments in waste management services and infrastructure.

Several national departments have a significant role to play in the implementation plan for the national Strategy. Of particular importance is the Department of Trade and Industry as the host of the National Cleaner Production Centre, the Department of Science and Technology as the facilitator of the Waste RDI Roadmap and the Technology and Innovation Agency (TIA), as well as SAPS and the NPA in terms of enforcement of the Waste Act. It is suggested that the DEA establish relevant institutional mechanism for ongoing engagement with these departments and government entities and where required, develop MOUs to provide for transparent reporting and intergovernmental cooperation around the relevant aspects of the 2018 NWMS.

7.2 Waste Minimisation

Goal: Prevent waste, and where waste cannot be prevented, reduce the total volume of waste disposed to landfill by 50% within 5 years; by 65% within 10 years; and at least 80% within 15 years through reuse, recycling, and recovery and alternative waste treatment.

Strategic Objective: ***Prevent waste through cleaner production, industrial symbiosis, and extended producer responsibility***	**Targeted Outcomes:** • Reduction in waste disposed to landfill in line with goal statement • Reduction in the toxicity of waste streams • 80% reduction in the production of single-use plastics not covered by EPR deposit schemes	**Socio-Economic and Environmental Impacts:** • Reduced GHG emissions from disposal of waste to landfill and recovery of low carbon energy from waste. • Reduced marine and terrestrial pollution from plastics packaging. • Reduced requirements for new landfill airspace, resulting in avoided costs for local government. • GDP growth and job creation in targeted sectors due to improved economic performance.	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
IndWMPs for priority wastes (WEEE, Paper and Packaging, Lighting, and Tyres) to include measures for cleaner production, industrial symbiosis and extended producer responsibility.	NCPC-SA supported by the Waste Bureau (DEA) and in collaboration with industry associations.	• Tyres: 2019 • WEE, Paper and Packaging, Tyres: 2020	• Number of IndWMPs meeting or exceeding performance targets within 5 years.
Strengthen the capacity and national reach of the NCPC-SA, with waste symbiosis programs established in all provinces.	NCPC-SA in partnership with the DEA, DST (TIA and Waste RDI Roadmap), Provinces, Industrial Development zones, business chambers and industry associations	• W. Cape, Gauteng, KZN – 2019 • E.Cape, Mpumulanga, N.West, - 2020 • Free State, Limpopo, N.Cape 2021	• Number of provinces with well-established Industrial Symbiosis Programmes. • Increase in training and technical support provided by the NCPC-SA
Restrict the production and retail of single-use plastics, to be replaced with bio-degradable alternatives.	DEA will work with dti, DST (TIA and Waste RDI Roadmap), retail and other affected industry associations	• Within 5 years, most single-use plastics to be covered by EPR deposit schemes	• Industry agreements to phase out single-use plastics

Strategic Objective: ***Prevent food waste***	**Targeted Outcomes:** • 50% reduction in food waste within 5 years.	**Socio-Economic and Environmental Impact:** • Job creation in the farm-to-table value chain. • Poverty alleviation • Improved child nutrition	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
Develop and implement a strategy for reducing food losses prior to retail associated with harvesting, processing, and transport of foods in collaboration with food producers and retailers.	The DEA will work with the DAFF in collaboration with food producers and retailers.	• Strategy Developed by 2020 • Annual Reporting on Strategy by DEA	• Reduction in food losses prior to retail. • Reduction in food waste in the retail sector
Improve consumer awareness and standards for labelling and marketing of perishable foodstuffs and "ugly" fruits and vegetables.	The DEA will work with the DoH, food retailers, the DTI and the National Consumer Commission (NCC) and South African Bureau of Standards (SABS) to promote compliance of food stuffs	• Marketing and labelling standards reviewed/revised by 2021 • Consumer awareness campaign launched in 2021	
Develop guidelines and norms and standards, for redistributing surplus foods and composting of spoilt food.	The DEA will work with the DoH, food retailers, the hospitality sector and NPO's	• Guidelines/Norms and Standards: 2020	

Strategic Objective: ***Increase reuse, recycling and recovery rates***	**Targeted Outcomes:** • 70% of paper recycled • 60% of plastic recycled • 90% of glass recycled • 90% of metals recycled • 40% of fly-ash recycled	**Socio-Economic and Environmental Impact:** • Job creation, entrepreneurship and SMME development in the recycling sector • Innovation in remediation of contaminated lands and addressing acid mine drainage using fly ash • Reduced requirements for new landfill airspace, resulting in avoided costs for local government.	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
Develop and implement a public procurement framework to support recycling, encompassing requirements for recycled content.	The DEA will work with NT and COGTA.	• Gazetting by 2021	• Achievement of procurement targets for recycled content in the public sector
Establish Materials Recovery Facilities and recyclate processing plants as Public Private Partnerships based on regionally integrated waste management planning.	The DEA will support provinces and local government in engaging with National Treasury (NT)	• All new landfills to include MRFs from 2019	• Number of new Materials Recovery Facilities and recyclate processing plants established
Industry standards to align technology requirements between primary producers and recyclers of plastics by ensuring that the design of products and packaging facilitate reuse and recycling.	The Waste Bureau, dti, and industry associations. The DST and the Innovation Hub will be key partners in generating knowledge and technical capacity to implement the waste RDI Roadmap	• Industry standards by 2019	• Increased materials recovery rate for plastics.
Norms and standards for the recycling of fly-ash to be gazetted.	The DEA, in collaboration with the DoE, Eskom, and TIA	• Norms and Standards gazetted by 2020	• Volume of fly ash recycled

Strategic Objective: ***Divert organic waste from landfill through composting and the recovery of energy***	**Targeted Outcomes:** • 50% reduction in volume of organic waste disposed to landfill within 5 years	**Socio-Economic and Environmental Impact:** • Reduction in GHG emissions as a result of waste to energy projects. • Improved resilience of communities with composting projects and/or schools participating in the biogas in schools program. • Job creation and SMME development in the biogas and composting industry • Reduced requirements for new landfill airspace, resulting in avoided costs for local government.	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
DEA to work with DoE on enabling policy environment to produce biogas through anaerobic bio-digestion of organic waste treating sewage and organic domestic waste.	The DEA will work with stakeholders, including the DoE, DST, DWAS, and Biogas Association	• Strategy and Regulatory framework finalised by 2020	• Number of new biogas projects involving organic waste • Volume of biogas produced from waste.
Programme linking National School Nutrition Programme to biogas digestor projects	DEA, DBE, DoE	• MOU with DBE by 2019	• Number of schools with biogas digesters
Local government to include composting in IWMPs	The DEA will work with stakeholders including provinces and local government	• All metros by 2019 • All districts by 2022 • All municipalities by 2023	• Number of new composting projects

Strategic Objective: ***Divert construction and demolition waste from landfill through beneficiation***	**Targeted Outcome:** • Construction and Demolition waste only disposed to landfill as cover.	**Socio-Economic and Environmental Impact:** • Reduced environmental footprint from construction. • Reduced requirements for new landfill airspace, resulting in avoided costs for local government.	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
The DEA will work with SANRAL and the South African Standards Bureau around best practice guidelines and standards for the reuse of C&D waste in roads and other building materials such as bricks.	DEA, SANRAL, construction industry association and SABS	• Publishing of best practice guidelines and guidelines by 2020	• Construction and Demolition waste only disposed to landfill as cover

Strategic Objective: ***Increase technical capacity and innovation for the beneficiation of waste***	**Targeted Outcomes:** • Increased capacity to deliver well-managed and innovative waste services.	**Socio-Economic and Environmental Impact:** • Enterprise development and innovation in the waste sector contributing to job creation and economic growth.	
Action	**Implementing Agents**	**Timeline**	**Performance Indicators**
Promote research and innovation in the waste sector and ensure that legislation and regulations are reviewed and updated to keep abreast of technical developments and remove unnecessary regulatory barriers to the uptake of new technologies.	The DEA will work with the DST through the Waste RDI Roadmap and TIA	• MOU between DEA and DST by 2019	• Number of waste beneficiation projects supported by TIA. • Published research in the waste sector
Increase technical capacity and skills in the waste sector.	The Waste RDI Roadmap will work with tertiary institutions to increase graduates specialising in waste management and ensure mentoring for graduates entering public service.	• 150 new waste management graduates by 2023	• Number of waste management graduates. • Number of waste management professionals in public service.

7.3 Effective and Sustainable Waste Services

Strategic Objective: ***Separate waste at source***	**Targeted Outcomes:** • 50% of households to be separating waste	**Socio-economic and environmental impact:** • Job creation. • Reduction in costs to local government in relation to collection and disposal of waste.	
Actions	**Implementing Agents**	**Timeline**	**Performance Indicators**
Integration of waste pickers into municipal collection services.	DEA, Waste RDI Roadmap, Local government, SALGA, Waste Pickers Association	• Guidelines for integrating waste pickers into domestic waste collection published by 2020 • All metros to have programs in place for integrating waste pickers by 2021 • All secondary cities by 2023	• Number of sustainable jobs/ decent livelihoods created in collecting recyclables
DEA to publish online and annually update guidelines, case studies and planning tools on separation at source for municipal managers.	DEA (Waste Bureau), Waste RDI Roadmap, SALGA	• Annual updates	• Downloads from online portal
A national awareness campaign around recycling.	DEA, Provinces, Municipalities	• Campaign launched in 2019	• % of residents separating at source.

Strategic Objective: ***Safe and environmentally sustainable disposable of hazardous household wastes and absorbent hygiene products***	**Targeted Outcomes:** • Reduction in the toxicity of municipal waste disposed to landfill.	**Socio-economic and environmental impact:** • Reduction in risks of leachate at landfill sites and • Reduction of hazardous compounds in sewage • Reduced risks to human health.	
Actions	**Implementing agents**	**Timeline**	**Indicators**
As part of separating waste at source, develop and implement a strategy for the safe disposal of domestic hazardous wastes that includes a communication and awareness strategy and extended producer responsibility as core components.	DEA, DoH, DTI, Industry Associations.	• Strategy developed by 2020. • Implementation of the strategy from 2020 going forward	• Reduced incidence of hazardous wastes in general landfill sites.
Develop and implement a strategy and standards relating to the design and disposal of Absorbent Hygiene Products (AHPs) such as baby and adult diapers, feminine care products.	DEA, DOH, Private sector, DTI, SABS	• Strategy developed by 2020. • Implementation of the strategy from 2020 going forward.	• Reduced disposal of AHPs to landfill

Strategic Objective: ***Effective integrated waste management planning***	**Targeted Outcomes:** • 95 % of households receive waste collection services in compliance with DWCS • 80% of IWMPs reflected in municipal budgets	**Socio-economic and environmental impact** • Increased private sector investment in the recycling sector, resulting in job creation • Appropriate and well managed waste services lead to reduced disease and illness, particularly in the young and old, and informal settlements	
Actions	**Implementing Agents**	**Timeline**	**Performance Indicators**
All provinces to have 5-Year Provincial Integrated Waste Management Plans approved by the Minister	DEA, Provinces, Municipalities	• Guidelines and reporting standards for provincial IWMPs to be released in 2019.	• All provinces to have updated IWMPS in place by 2020 as per the requirements of the Waste Act, and to be reporting annually, including data from metro, local and district IWMPs. • All municipalities with IWMPs reporting on SAWIS
Waste Bureau and Waste RDI Roadmap to build capacity in integrated waste management planning, provide revised guidelines for IWMPs	DEA (Waste Bureau), Waste RDI Roadmap, SALGA, Provinces and Municipalities.	• In 2019, Waste Bureau to have business plan, organisational strategy, CEO appointed.	• Number of municipal IWMPs submitted to provinces and approved.
Municipalities to include provisions for recycling drop off/buy-back/storage centers in their IWMPs – supported by fiscal mechanisms/linked to IndWMPs	DEA (Waste Bureau), Waste RDI Roadmap, National Treasury, SALGA, Provinces and Municipalities.	• Paper and Packaging IndWMPs to be implemented from 2021. • MOU with treasury/conditional grant by 2021.	• Number of new recycling drop off/buy-back/storage centres established.

7.4 Compliance and Awareness

Strategic Objective: ***Reduce littering and illegal dumping***	**Targeted Outcomes:** • Reduction in litter and illegal dumping	**Socio-economic and environmental impact** • Reduction in coastal and marine plastics pollution • Culture of compliance and civic responsibility	
Actions	**Implementing Agents**	**Timeline**	**Performance Indicators**
DEA to launch a national awareness campaign around litter and illegal dumping.	DEA, Provinces, local municipalities and the private sector.	• National awareness campaign to be launched in 2019.	• Media spend – print, television, radio • Social media campaign statistics
DEA to establish microgrant facility for training and equipment for community-based cleanup operations	DEA (Waste Bureau), civil society, City Improvement Districts, National Treasury	• First micro-grants issued by 2020	• Number of microgrants issued • Reports by micro-grant recipients
Reform and enforce the legal framework for fines and prosecution of litter and illegal dumping and align the Standard Operating Procedures between SAPS and the EMI.	DEA, SAPS, NPA	• National workshop on enforcement of the Waste Act in 2019 • MOU in 2019	• Annual reports on administrative action and prosecutions undertaken with respect to NEM:WA • Number of training sessions with prosecutors relating to environmental crimes, including the brown issues at national, provincial, district and local level

Strategic Objective: ***Enhance capacity to enforce the Waste Act and International Agreements***	**Targeted Outcomes:** • Compliance with the Waste Act and International Agreements on Chemicals and Waste	**Socio-economic and environmental impact:** • Culture of compliance • Reduction in pollution and associated social and environmental costs	
Actions	**Implementing Agents**	**Timeline**	**Performance Indicators**
Clarify the mandate and duties EMIs in respect of the implementation of NEM:WA (national, provincial and local)	DEA, Provinces, local municipalities	• Defined roles and responsibilities in place by 2020. • .	• Reporting on roles and responsibilities in place.
Promulgating regulations on the import and export of waste	DEA, Department of Transport	• Regulations in place by 2022	• Enforcement actions in terms of regulations on the import and export of waste
DEA to strengthen national capacity to prosecute in terms of the Waste Act.	DEA, SAPS, NPA	• Annual national workshop on enforcement of the Waste Act, commencing in 2019	• Number of administrative actions and criminal prosecutions.

Strategic Objective: ***Ensure municipal landfill sites and waste management facilities comply with licensing requirements***	**Targeted Outcomes:** • Local government compliance with the Waste Act	**Socio-economic and environmental impact:** • Culture of compliance • Reduction in pollution and associated social and environmental costs • Increased cost of disposing waste to landfill	
Actions	**Implementing Agents**	**Timeline**	**Performance Indicators**
Financial mechanisms such as a landfill tax in place to support compliance and monitoring.	DEA (Waste Bureau), National Treasury, Provinces, local municipalities	• Policy recommendations by 2020. • Financial mechanisms in place by 2021.	• Revenue allocated to monitoring and compliance of licensed waste facilities.
National Action Plan on landfill licensing compliance.	DEA (Waste Bureau)	• National Action Plan by 2020, implementation from 2021	• 80% of municipal landfills comply with licensing conditions by 2023.

7.5 Roles and Responsibilities

Although the NWMS is implemented in terms of NEMA and the Waste Act, for which the Minister for the Environment is responsible, waste is generated by all social and economic sectors and therefore implementation of the NWMS requires a high degree of cooperation and understanding between government departments, spheres of government, the private sector and civil society.

7.5.1 National Government

The Minister of Environment and Department of Environmental Affairs (DEA) have overall responsibility for implementation of the National Waste Management Strategy. To ensure the successful implementation of the strategy, the DEA will issue annual progress reports on its implementation, and these reports may include amendments and/or clarifications to the strategy or its implementation plan. The Department of Environmental Affairs will establish appropriate governance mechanism for coordination the implementation and will where required, enter into Memoranda of Agreement with other national departments and agencies that are involved in the implementation of the strategy. These include:

- The Department of Trade and Industry (dti) and the National Cleaner Production Centre of South Africa (NCCP-SA) which have an interest in the socio-economic impact of Industry Waste Management Plans and a critical role to play in promoting waste minimisation and the circular economy through cleaner production and industrial symbiosis, as well as an interest in industries associated with a secondary economy around waste, such as the recycling industry.
- The Department of Trade and Industry, the South African bureau of Standards and the National Consumer Commission on standard setting, labelling and consumer awareness of products.
- The Department of Science and Technology, the CSIR and Technology and Innovation Agency (TIA) in relation to Waste Research, Development and Innovation Roadmap (Waste RDI Roadmap). The Waste RDI Roadmap has a critical role to play in building technical capacity within the waste sector and undertaking research to support development and innovation in the Waste Sector. As such, the implementation of the Waste RDI roadmap should provide scientific support for integrated waste management planning by provinces and local government on IWMPs, and to the private sector in terms of Industry Waste Management Plans. The Technology and Innovation Agency has an important role to play in supporting innovation and the uptake of new technologies within the sector.
- The Department of Energy (DoE), which has responsibility for regulation of Waste to Energy projects as they pertain to energy generation. The DEA and DoE will collaborate on the development and implementation of policy and strategy around promoting waste to energy projects, particularly involving organic waste. The DoE are also responsible for regulation of coal-powered energy generation, which is responsible for the largest single waste stream by volume in the country, in the form of fly-ash.
- The Department of Agriculture, Forestry and Fisheries (DAFF), which has responsibility for regulation of agriculture, is an important partner in the development and implementation of a strategy to reduce food losses and manage agricultural waste, which represents a significant volume of organic waste with beneficiation opportunities, especially around waste to energy projects involving biogas and other waste derived fuels.
- The Department of Health (DoH), which has responsibilities in relation to regulations around the food safety that potentially affect handling of food as a waste prevention measure, as well as regulations around Health Care Risk Waste and Absorbent Hygiene Products.

- The Department of Water and Sanitation (DWAS), which has regulatory responsibilities and an interest in domestic wastes, sewage, contaminated lands, and landfills to the extent that they potentially impact on water quality.
- The Department of Basic Education (DBE) which plays an important role in raising awareness around waste and recycling in schools through the school curriculum, and is responsible for standards around school buildings and the National School Nutrition Programme with which there are important synergies in relation to projects involving the use of biogas digesters in schools to process organic waste and generate biogas and fertiliser, which can be used to cook school meals and as fertiliser in school food gardens.
- The Department of Transport responsible for regulating the transportation of goods and services and tracking and tracing transboundary waste including maritime services (waste from airborne cargo and maritime cargo and dumping at sea
- The Department of Home Affairs and South African Revenue Service customs services that monitor ports of entry and movement of waste
- The South African Police Service and National Prosecuting Authority (NPA) which have responsibilities in relation to enforcement of the Waste Act and municipal by-laws and need to work closely with the monitoring and enforcement arm of the DEA.

In addition to the above, the Department of Planning, Monitoring and Evaluation (DPME) is responsible for government wide monitoring and evaluation of national outcomes in line with the NDP 2030. DEA will work with DPME to mainstream NWMS 2018 targets and monitor and evaluate on a regular basis.

Further to this, DPME host the implementation of the Operation Phakisa, which includes the Chemicals and Waste Phakisa. The Chemicals and Waste Phakisa provides detailed plans for both local and national interventions around waste management, particularly in relation to industrial wastes, that align with the goals of the NWMS, and should be considered part of the implementation plan for the NWMS 2018.

As part of the process of adopting the NWMS, the DEA will include a budget for implementation of the NWMS that will be finalised in consultation with National Treasury. National Treasury and the South African Revenue Service (SARS), which both fall under the mandate of the Minister of Finance, have important roles to play in implementation of the NWMS that are inherent to their function. SARS is responsible for collecting revenue from waste management levies such as Plastic Bag Levy and the Waste Tyre Levy, and National Treasury is responsible for allocating this revenue to the Waste Bureau for disbursement to stakeholders and projects as per Industry Waste Management Plans, where these apply.

The 2014 Amendment to the Waste Act provides for the establishment of the Waste Bureau as an independent juristic entity reporting to the Minister for Environment. As part of implementation of the 2018 NWMS and associated IndWMPs, the Waste Bureau needs to be properly capacitated in accordance with a business plan and organisational strategy. The Waste Bureau will be responsible for the monitoring and evaluation of Industry Waste Management Plans and the disbursement of revenues associated with these, as well as providing technical support and capacity building to industry and government in relation to waste management plans. It is therefore important that the dti and DST, through the Waste RDI Roadmap and NCPC-SA, are involved in determining and implementing the Waste Bureau's organisational strategy.

As part of shifting the focus of municipal services from simply collection and disposal, to separation at source and recycling of waste, municipalities will need to invest in systems and facilities to support

separation at source and the recovery of recyclable material. No single model or approach is going to meet the needs of all municipalities and metros, which are likely to require varying combinations of public investment and public private partnerships but will in both cases need a level of technical and financial support from National Treasury for project preparation and infrastructure investments.

In addition, DEA will work with National Treasury to include green procurement principles around recycling into the public procurement policy.

7.5.2 Provincial Government

In terms of the Waste Act, Provincial MECs are responsible for developing Provincial Integrated Waste Management Plans (IWMPs). This was only imperfectly achieved during the implementation of the 2011 NWMS and will be a focus for the implementation of the 2018 NWMS. Primary functions that provincial waste management plans should perform include:

- Improving the quality of waste information by aggregating, consolidating and analysing information on waste flows, services and infrastructure (existing and planned) drawn from district and local IWMPs. Provinces should be reporting this data to the DEA and the national WIS.
- Planning and Guiding public and private investment in regional waste management facilities (including landfills, material recovery facilities and recyclate processing plants) that may draw waste from multiple local municipalities and/or districts.
- Addressing waste management issues that are specific to the provincial economic, social, and environmental profile.

The DEA, through SAWIS, will support provincial government by providing guidelines for the monitoring, reporting and evaluation of IWMPs.

7.5.3 Local Government

Metropolitan (Metro), district and local municipalities are critical to the implementation of the NWMS as they are responsible for the planning and delivery of waste collection and disposal services and infrastructure. In relation to waste, district municipalities are primarily responsible for providing technical support to local municipalities and assisting with regional planning and coordination. Waste collection and disposal to landfill is typically undertaken by local municipalities and metros, although in some cases – particularly for metros – these services may be accomplished by subcontracting waste services companies.

As part of the implementation of the 2018 NWMS, local government needs to shift the focus of waste collection services to incorporate separation at source to promote diversion of waste from landfills through reuse, recycling and recovery. The DEA has already developed detailed guidelines for the content and format of IWMPs, but these need to be updated and augmented to support the required shift in focus. In particular:

- The DEA (Waste Bureau) needs to provide guidance on models for incorporating the informal sector (waste pickers), waste collectives and SMME's into municipal collection services to accomplish separation at source.
- All municipalities should include the provision of drop-off/buy back centres and storage facilities for recyclables in their IWMPs. The DEA (Waste Bureau) will work with partners and stakeholders such as National Treasury and SALGA to develop models for the financing of this infrastructure that may leverage Industrial Waste Management Plans and/or additional fiscal transfer mechanisms such as conditional grants.

- DEA will work with National Treasury to investigate the feasibility of implementing a landfill tax and prepare policy to assist municipalities in financing monitoring and compliance of landfills as part of a national campaign around compliance with waste management licensing.
- IWMPs should include awareness and enforcement strategies aimed at creating a culture of compliance with the Waste Act and municipal by-laws involving waste collection and disposal, littering and illegal dumping. These will be supported by a national waste awareness campaign.

In accordance with the Waste Act, all district and local authorities must appoint a Waste Management Officer, who should work closely with one or more EMI's to ensure compliance with the Waste Act.

7.5.4 Private Sector

The private sector is involved throughout the waste sector as generators of waste, providers of waste-related services, recyclers of waste and consumers of recycled materials – as well as providing an important interface to consumers. The involvement of the private sector is therefore critical to the implementation of the National Waste Management Strategy.

The 2018 NWMS provides a range of waste prevention measures that depend on collaboration with the private sector for implementation. Of general relevance to companies involved in production and manufacture, is the promotion of waste prevention through cleaner production and industrial symbiosis, which government will support through the NCPC-SA. The Waste RDI Roadmap and TIA will play an important role in supporting private sector innovation, adoption of new technologies, and research. The DEA will seek to work with the private sector to identify and remove unnecessary regulatory barriers to private sector innovation and adoption of new technologies.

The DEA is collaborating with the private sector around priority wastes in relation to electronic waste, paper and packaging, lighting and tyres with a call for Industrial Waste Management Plans to be developed by the private sector, and which will be finalised and implemented during the 2018 NWMS.

The DEA also intends to create an enabling policy environment and provide support to the private sector around opportunities for waste prevention and minimisation through product design, innovation and the adoption of new technologies and standards in relation to waste streams of concern due to their toxicity or volume. These include:

- Organic waste in general, and food waste in particular
- Construction and demolition waste
- Absorbent hygiene products and other hazardous domestic wastes
- Fly ash and bottom ash

Private sector companies, particularly in the recycling sector, play an important role in raising consumer awareness around waste. With the rollout of a national waste awareness campaign and the introduction of extended producer responsibility in relation to priority wastes, there will be opportunities for government and the private sector to collaborate on raising public awareness, particularly in relation to recycling of priority wastes, food waste, and safe disposal of hazardous domestic wastes and absorbent hygiene products.

7.5.5 Informal sector

Currently an estimated 60,000 people are involved in collection of recyclables on an informal basis as waste pickers (SOWR, 2018). The interests of waste pickers are represented by the South African Waste Pickers Association (SAWPA), which is allied to a global movement of informal recyclers. Waste

pickers collect food and recyclables directly from domestic and commercial bins as well as retrieve recyclables from landfill sites.

Waste Picking is unregulated, the working conditions may be dangerous, and the monetary rewards generally only provide marginal livelihoods. Waste pickers are often regarded with distrust by homeowners, and is little positive collaboration between waste pickers, the private sector and local municipalities. At the same time, waste pickers have been estimated to save municipalities approximately R700 million per year in collection and disposal costs.

The National Waste Management Strategy is not intended to exclude the informal sector from waste management and views waste pickers as playing a necessary an important role in the recycling industry. The concerns of government in relation to waste pickers are:

- To minimise health risks to waste pickers through raising public awareness around safe domestic disposal of waste and integrating waste pickers into municipal collection and disposal services, particularly with respect to separation at source programs.
- To improve the market value of recyclables through stimulating demand and thereby improving waste picker livelihoods.

Waste picking on landfills is undesirable, and where this currently happens local government and private sector recyclers should put in place material recovery facilities that can be safely worked by waste pickers before waste is disposed to landfill. In general, there needs to be closer collaboration between government, recycling industry associations and SAWPA in the design and implementation of Industry Waste Management Plans to ensure the role of the informal sector is recognised and accommodated in these plans and, where necessary and appropriate, regulations are put in place to protect the interests of informal waste pickers.

The DEA also recognises that there is scope to for entrepreneurship within the informal sector that can lead to a formalisation of jobs and improve livelihoods and working conditions. Municipalities and IndWMPs can support this process – for instance, waste collectives can be incorporated into municipal collection services to increase recovery rates of recyclables.

7.5.6 Civil society

Public awareness of the impacts of waste is critical to achieving a culture of compliance and civic responsibility around waste, particularly around the issues of littering and illegal dumping. While local government can and should provide infrastructure such as public bins and services such as street sweeping, it is important to recognise that littering and illegal dumping represent a major public cost within a context in which government has many competing demands on tightly constrained resources. Litter and unmanaged waste cannot only be regard as an issue of government service delivery and government should support community-based initiatives to tackle these issues both in terms of practical response such as clean-up drives and in terms of raising public awareness and effecting behaviour change.

There are a number of local and international Non-Governmental Organisations (NGOs) as well as Community-Based Organisations (CBOs) and civil society institutions such as churches that should be considered partners in changing behaviour around waste. Schools are another potential locus for community-based action on waste.

In terms of community participation in preventing and cleaning up litter and illegal dumping, public spaces such as playgrounds and parks represent an obvious source of social impact and in terms of

environmental impact, wetlands, estuaries, beaches and rivers are important. While in EPWP programmes are mitigating these issues, government recognises that behaviour change and community engagement are fundamental components of a sustainable solution.

In relation to achieving a culture of compliance, particularly in relation to the workplace and occupational health and safety issues pertaining to waste, trade unions have an important role to play in ensuring employers comply with regulations and norms and standards around waste, as well as in raising workers awareness both in terms of workplace issues around waste, or more general awareness around waste.

7.6 Supporting Initiatives

Improving the quality and reliability of data on waste streams and addressing challenges in the financing of waste services and infrastructure, which are closely related, is critical to the successful implementation of the revised NWMS.

7.6.1 Information Management

Collection of waste data enables proper recording and tracking of waste in the value chain. This allows for evidence-based planning of service requirements and infrastructure provision for integrated waste management and can be used to inform both public and private investment. The South African Waste Information System (SAWIS) serves as a central repository of waste data that is being incrementally developed and implemented.

While in principle NEMWA requires all licensed waste management activities to be registered on SAWIS and report on waste quantities on a regular basis, and progress has been made in establishing SAWIS under the South African Waste Information Centre (SAWIC), in practice significant gaps exist in terms of mechanisms for enforcing compliance as well as in the design of the reporting framework. This has resulted in both under-reporting to SAWIS and inconsistencies in the data currently stored.

While SAWIS is intended to provide a national repository of waste information, NEMWA provides for creation of provincial Waste Information Systems that must at least contain the information required in the national repository and empowers provinces to request this information from municipalities.

Improving the quality of information in the SAWIS requires an investment in upgrades to the SAWIS itself to improve ease of use, reporting templates and data integrity to ensure consistent data formats and mitigate the risks of double-counting along the waste value chain. This needs to be complemented by regulatory interventions to make reporting to SAWIS mandatory that are coupled with a training and outreach strategy to improve capacity to report, particularly on the part of municipalities.

Currently, data on provincial and local IWMPs is limited to recording whether they exist or not. There is a need for reporting templates on the implementation of IWMPs to be designed and integrated into the SAWIS.

7.6.2 Financing of Waste Services

The provision of waste service is capital intensive function as it requires adequate infrastructure such as landfill sites which are expensive to establish and operate. At the same time ongoing operational expenses are significant due to the high cost of vehicles and the maintenance and fuel costs. Many municipalities do not have adequate landfill sites nor sufficient waste vehicle fleets to reliably provide collection services on a weekly basis.

Although the DEA has provided tariff guidelines to assist municipalities in determining cost-reflective tariffs, the proposed methodology has proved to be time consuming and cumbersome and in many cases its application results in suggested tariff increases that would be politically unsustainable, particularly in municipalities with a large percentage of poor and indigent households.

At the same time, environmental levies on waste such as the plastic bag levy yield significant revenues to the national fiscus that have not been effectively ring-fenced for waste management. Breaking the vicious cycle of underinvestment in waste management requires partnership with the private sector to invest in waste minimisation measures that extend the life of municipal landfills and create opportunities for private sector involvement in separation at source and recycling that reduce the costs of delivering waste collection services for municipalities. Relatively small catalytic investments in recycling infrastructure such as drop-off centres and material recovery facilities by National Treasury have the potential to not only reduce waste management costs for local municipalities, but also to improve the economic efficiency of large MIG grants for landfills.

The DEA will work in consultation with National Treasury and SALGA to develop and cost a framework for investment in separation at source and waste beneficiation that will leverage private sector investment on the basis of integrated waste management planning at a local and provincial level and effectively reinvest environmental levies charged on waste streams.

7.7 Communications Strategy

A communication plan is critical to the successful implementation of the 3rd NWMS which will involve a range of stakeholders such as different governmental departments, local, provincial and national government, industry associations, the private sector, academic institutions, and the general public. For strategic plans to be effectively implemented, they rely upon the input and commitment of a wide range of organisations, government and industry who need to be involved and informed in the process from its earliest stages to the generation of results.

The importance of communication sometimes is overlooked or underestimated during the creation and implementation of a strategic plan. While those involved in the planning effort may be aware of what is going on, those outside of the process are often uninformed and uninvolved. Effective communication ensures that all stakeholders are aware of the plan, its importance and how they might be impacted. After all, to achieve success, the 3rd NWMS will rely on the activities of all stakeholders - not just the DEA.

Communication also plays a vital role in monitoring and evaluation. Continuing to communicate with multiple stakeholders as the plan is implemented, to share updates on progress, roadblocks and changes to the plan, helps to keep the plan alive. As governmental departments or associations are assigned responsibility for achieving certain plan objectives, they should also be required to report on their progress on a regular basis.

The following activities are suggested for successful communication to support the implementation of the 3rd NWMS:

Publicise the NWMS

This will involve distributing printed A5 booklet versions of the 3rd NWMS and amended NEMWA across all spheres of government, to industry associations and civil society and ensuring availability of a pdf version of both documents on relevant websites and social media platforms e.g. DEA; SAWIS;

Dti: DST; DoE; DoH; DWAS; DAFF; CSIR; Industry Associations; Provincial and Municipal websites etc. This should be initiated within 6 months of the NWMS being approved.

Integrate the NWMS into local planning

Develop and issue guidelines for municipalities in interpreting, applying, and implementing the National Waste Act and the 3rd NWMS in their IWMPs and IDPs. This will be accomplished in partnership with SALGA and will target metropolitan, district and local municipalities, and will be followed through with an annual report on progress and case studies. The initial guidelines will be made available within 6 months of approval of the NWMS.

Integrate the NWMS into the National Waste Awareness Campaign

Integrate the 3rd NWMS into social media activity as part of the National Waste Awareness Campaign. The target audience for this will include schools, tertiary education, and the general public and this will be accomplished within 18 months of approval

NWMS Roadtrip

This will involve undertaking workshops around the understanding, application and implementation of the 3rd NWMS across South Arica. The DEA will run workshops in each province with all district and local waste management officers based on a 'train the trainer' approach that will provide them with the skills and media to run workshops within their municipal structures and communities. This will be accomplished within 12 months of approval.

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