

NATIONAL WASTE MANAGEMENT STRATEGY 2020

environment, forestry & fisheries

Department: Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

2030 NDP

Table of Contents

Foreword 7
1 RATIONALE FOR THE NWMS 2020 9
2. CONTEXT 10
2.1 THE WASTE LANDSCAPE IN SOUTH AFRICA 11
2.1.1 General Waste 11
2.1.2 Hazardous Waste 12
2.1.3 Waste Prevention 13
2.1.4 Food Waste 14
2.1.5 Waste Services 14
2.1.6 Waste collection including separation at source 15
2.2 ALIGNMENT TO THE SUSTAINABLE DEVELOPMENT GOALS 16
2.3 ALIGNMENT TO THE NATIONAL DEVELOPMENT PLAN: VISION 2030 17
2.4 ALIGNMENT TO THE MTSF PRIORITIES FOR THE 6TH ADMINISTRATION 18
2.5 LEGISLATIVE FRAMEWORK AND MULTI-LATERAL ENVIRONMENTAL AGREEMENTS (MEAs) 19
3 PURPOSE, SCOPE, KEY PRINCIPLES AND EXPECTED OUTCOMES 21
3.1 PURPOSE 22
3.2 SCOPE 22
3.3 KEY PRINCIPLES 22
3.4 EXPECTED OUTCOMES 23
4 STRATEGIC APPROACH 24
4.1 INTRODUCTION 25
4.2 THE CIRCULAR ECONOMY 25
4.3 THE WASTE MANAGEMENT HIERARCHY 28
4.4 CRITICAL ASSESSMENT OF THE 2011 NWMS 28
4.5 CHEMICAL AND WASTE ECONOMY (CWE) PHAKISA AND THE GOOD GREEN DEEDS PROGRAMME 30
5 STRATEGIC PILLARS OF THE NWMS 2020 32
5.1 PILLAR 1: WASTE MINIMISATION 33
5.1.1 Strategic Thrust 33
5.1.2 Expected Outcome/s 33
5.1.3 Pillar 1 Focus Areas 33
5.1.4 Strategic Role-players 35
5.2 PILLAR 2: EFFECTIVE AND SUSTAINABLE WASTE SERVICES 36
5.2.1 Strategic Thrust 36
5.2.2 Expected Outcome/s 36
5.2.3 Pillar 2 Focus Areas 36
5.2.4 Strategic Role-players 37
5.3 PILLAR 3: COMPLIANCE, ENFORCEMENT AND AWARENESS 37
5.3.1 Strategic Thrust 37
5.3.2 Expected Outcome/s 37
5.3.3 Pillar 3 Focus Areas 37
5.3.4 Strategic Role-players 38
6 KEY INTERVENTIONS AND EXPECTED OUTCOMES 39
7 MONITORING AND EVALUATION FRAMEWORK 41
8 IMPLEMENTATION PLAN 41
9 ROLES AND RESPONSIBILITIES 51
9.1 NATIONAL GOVERNMENT 51
9.2 PROVINCIAL GOVERNMENT 53
9.3 LOCAL GOVERNMENT 54
9.4 PRIVATE SECTOR 54
9.5 INFORMAL SECTOR 55
9.6 CIVIL SOCIETY 56
10 SUPPORTING INITIATIVES 56
10.1 INFORMATION MANAGEMENT 56
10.2 FINANCING OF WASTE SERVICES 57
10.3 COMMUNICATIONS STRATEGY 57
10.3.1 Publicise the NWMS 2020 58
10.3.2 Integrate the NWMS 2020 into local planning 58
10.3.3 Integrate the NWMS into the National Waste Awareness Campaign 58
10.3.4 NWMS 2020 Roadshow 58

APPENDIX 1: Status Quo Assessment 6059

Abbreviations

AHP	Absorbent Hygiene Products
CBO	Community Based Organisation
C&D	Construction and Demolition
CFL	Compact Fluorescent Lamp
CNG	Compressed Natural Gas
COGTA	Department of Cooperative Governance and Traditional Affairs
CSIR	Council for Scientific and Industrial Research
DEFF	Department of Environment, Forestry and Fisheries
DALRRD	Department of Agriculture, Land Reform and Rural Development
DoH	Department of Health
DHA	Department of Home Affairs
DoT	Department of Transport
DHSWAS	Department of Human Settlements, Water and Sanitation
DMRE	Department of Mineral Resources and Energy
DPWI	Department of Public Works and Infrastructure
DSI	Department of Science and Innovation
DTIC	Department of Trade, Industry and Competition
EHP	Environmental Health Practitioner
EMI	Environmental Management Inspector
EPR	Extended Producer Responsibility
EPWP	Extended Public Works Programme
GDP	Gross Domestic Product
HCRW	Health Care Risk Waste
IDP	Integrated Development Plan
IWMP	Integrated Waste Management Plan
IndWMPs	Industry Waste Management Plans
MEC	Member of Executive Council
MiG	Municipal Infrastructure Grant

MOU	Memorandum of Understanding
MRF	Material Recovery Facility
NCC	National Consumer Commission (NCC)
NCPC-SA	National Cleaner Production Centre of South Africa
NGO	Non-Governmental Organisation
NPSWM	National Pricing Strategy for Waste Management
NT	National Treasury
NWMS	National Waste Management Strategy
NEM: WA	National Environmental Management Waste Act, 2008, as amended in 2014
NPA	National Prosecuting Authority
POPs	Persistent Organic Pollutants
RDF	Refuse Derived Fuel
SABS	South African Bureau of Standards
SACN	South African Cities Network
SALGA	South African Local Government Association
SAPS	South African Police Service
SARS	South African Revenue Service
SAWIC	South African Waste Information Centre
SAWIS	South African Waste Information System
SEIAS	Socio-Economic Impact Assessment Study
SETA	Sector Education Training Authority
SMME	Small, Micro and Medium Enterprise
SoWR	State of Waste Report
Waste RDI	Waste Research, Development and Innovation (Roadmap)
WEEE	Waste, Electric and Electronic Equipment
WMO	Waste Management Officer

Glossary of Terms

Anaerobic digestion	Anaerobic digestion is a sequence of processes by which microorganisms break down biodegradable material in the absence of oxygen
Biogas	Refers to the mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide.
Biomass	Refers to plant or animal material used for energy production (electricity or heat), or in various industrial processes as raw substance for a range of products.
Circular Economy	An economy that is restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles. https://www.ellenmacarthurfoundation.org/circular-economy/concept
Extended Producer Responsibility	Refers to an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life"
Industrial Symbiosis	Refers to a resource efficiency approach where unused or residual resources (Material, energy, water, waste, assets, logistics, expertise etc.) of one company are used by another, resulting in mutual economic, social and environmental benefits.
Materials Recovery Facility	A specialized plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.
Recyclate	Refers to raw materials that are sent to, and processed in, waste recycling plants or materials recovery facilities.
Refuse Derived Fuel	A fuel produced from various types of waste such as municipal solid waste (MSW), industrial waste or commercial waste.
Waste Beneficiation	Refers the treatment of waste to improve its physical or chemical properties to use it as a raw material into production processes and extracting economic value.

Waste to Energy	The process of generating energy in the form of electricity and/or heat from the primary treatment of waste, or the processing of waste into a fuel source.
Waste Minimisation	Waste Minimisation is a waste management approach that focuses on reducing the amount and toxicity of hazardous waste generated. Waste minimization techniques focus on preventing waste from ever being created, otherwise known as source reduction, and recycling. These techniques can be practiced at several stages in most waste generating processes, but require careful planning, creative problem solving, changes in attitude, sometimes capital investment, and genuine commitment. https://www.eiu.edu/environ/doc123/Waste%20Minimization.pdf

Foreword

Fellow South Africans

I am very pleased to be introducing the National Waste Management Strategy (NWMS) 2020. 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 through shared socio-economic growth and development.

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 and is aligned and responsive to the Sustainable Development Goals (SDGs) of Agenda 2030 adopted by all United Nations (UN) member States. It is also aligned and responsive to South Africa's National Development Plan (NDP): Vision 2030 which is our country's specific response to, and integration of the SDGs into our overall socio-economic development plans.

This NWMS 2020 revises and updates the 2011 strategy by building on the successes and lessons from the implementation of that strategy and addressing the challenges and gaps identified. Given that this strategy has been developed at the onset of the 6th term of democratic administration in the country, its revision has also taken into account the national and Medium Term Strategic Framework (MTSF) priorities outlined for the 5-years comprising the term of administration.

Most importantly, the 2020 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 waste from one production process to serve as raw materials for another production process.

In line with the outcome-based planning approach of government, the strategy is premised on three (3) pillars which will see a future South Africa with zero waste in landfills; cleaner communities, well managed and financially stable waste services, and a culture of zero tolerance of pollution, litter and illegal dumping. The Government priorities will be achieved through three (3) supporting pillars, namely Waste Minimisation; Effective and Sustainable Waste Services; Compliance, Enforcement and Awareness. Collectively, the outcomes, strategic pillars, interventions and actions consolidate and builds on the eight (8) overarching goals of the 2011 strategy.

Significant strategic shifts from the 2011 strategy made in the NWMS 2020 includes:

- Addressing the role of vulnerable groups, waste pickers and the informal sector and supporting women, youth and people living with disabilities in the circular economy;
- Promoting approaches to the design of products and packaging that reduce waste or encourage reuse, repair and preparation for recycling, support markets for source separated recyclables;
- Investigating potential regulatory or economic interventions to increase participation rates in residential separation at source programmes;
- Investing the economies associated with transporting of recyclables to waste processing facilities;
- Addressing the skills gap within the sector with a special focus on women, youth and people living with disabilities; and

- Engagement with the National Treasury regarding the operational expenditures for municipalities associated with implementing the NWMS and the Waste Act.

Additionally, the NWMS 2020 provides an enabling environment for the projects identified in the 2017 Operation Phakisa Chemicals and Waste Economy (CWE). The CWE as 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.

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 is a cause for a great concern. The NWMS 2020 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 NWMS 2020 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 revised 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 Environment, Forestry and Fisheries (DEFF) looks forward to working with you in taking forward the goals of this important national strategy for waste management which is promoting the waste hierarchy and the circular economy principles.

Regards,

…….
BD Creecy, MP
Minister of Forestry, Fisheries and the Environment

1 RATIONALE FOR THE NWMS 2020

The management of waste in South Africa falls within the mandate of the Department of Environment, Forestry and Fisheries (DEFF). This mandate is derived from Section 24 (Environment) of the Constitution of the Republic of South Africa (Act 108 of 1996) which states:
"Everyone has the right –

(a) to an environment that is not harmful to their health or wellbeing; and
(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
    (i) prevent pollution and other degradation;
    (ii) promote conservation; and
    (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

To give effect to this mandate, the DEFF has developed and promulgated policies, legislation, strategies and programmes. Key amongst these is the National Environmental Management: Waste Act 59, 2008 (hereinafter referred to as "the Waste Act") and the NWMS of 2011. The NWMS is a statutory requirement of the Waste Act.

The NWMS provides a coherent framework and strategy for the implementation of the Waste Act and outlines government's policy and strategic approach to waste management within the South African government's context and agenda of socio-economic development that is "equitable, inclusive, sustainable and environmentally sound".[1]

This current NWMS 2020, which revises and updates the 2011 strategy, also achieves the following:

- Assimilates our strategic approach to waste management with the commitments and directives of the Sustainable Development Goals 2030 (hereinafter referred to as "the SDG's") and South Africa's National Development Plan: Vision 2030 (hereinafter referred to as "the NDP");
- Unequivocally locates waste management as one of the key underpinnings of South Africa's economy and social fabric; and
- Integrates and provides and enabling environment for the DEFF's 2017 Chemicals and Waste Economy Phakisa and government's 2019 Good Green Deeds Programme.

The NWMS 2020 takes into account applicable and relevant feedback provided during public consultation processes held on the draft version. It also takes into account progress, challenges and lessons learnt from the implementation of the 2011 NWMS and as stated above, the political, social, environmental and economic context within which the waste sector operates and impacts on.

[1] DEFF Budget Policy Statement 2019/20, Minister Barbara Creecy, July 2019.

2. CONTEXT

Also key to the NWMS 2020 is the development and the livelihoods, not just development but sustainable development as stated by the former United Nations (UN) Secretary-General, Mr. Koffi Annan at the World Summit on Sustainable Development that was held in Johannesburg in 2002;

"The model of development we are accustomed to has been fruitful for the few, but flawed for the many. A path to prosperity that ravages the environment and leaves a majority of humankind behind in squalor will soon prove to be a dead-end road for everyone".

Koffi Annan, World Summit on Sustainable Development, September 2002

2.1 THE WASTE LANDSCAPE IN SOUTH AFRICA

According to the 2018 State of Waste Report, in 2017 South Africa generated 55 million tonnes of general waste, with only 11% being diverted from landfill. These trends, coupled with limited growth in the Gross Domestic Product (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.

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. This is through among others, the recycling of paper, glass, plastics, metals, tyres, power generation waste, waste oils, pesticides, batteries, lighting equipment, WEEE, 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 such as Biogas and Bio refinery projects have a potentially important role to play in diversion. According to research, 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.

2.1.1 General Waste

General waste arising consists of biomass and organic waste, making this the largest single general waste type. The next single largest general 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 Electrical and Electronic Equipment (WEEE) will increase.

Pollution of the coastline and oceans by tiny pieces of plastic debris (micro plastic) is causing widespread and severe negative impacts on marine biodiversity and it is crucial that South Africa, with a coast line in excess of 3000km, works collaboratively with the international community to find practical solutions to firstly reducing the rate of plastic waste load into environment and secondly to address existing pollution.

The following Table 1 indicates the various types of general waste as per the Waste Act classification system and the total tonnages that are handled in the country.

Table 1: General waste by management option in 2017 (SoWR, 2018)

Waste type		Local generation	Imports	Exports	Total tonnage managed	Storage / stockpile	Recycling / recovery	Treatment	Disposal	LOC
GW01	Municipal waste	4 821 430			4 821 430	0.0%	0.0%	0.0%	100.0%	
GW10	Commercial and industrial waste*	360 884			481 179	0.0%	0.0%	0.0%	100.0%	
GW14	Fly ash and dust	4 346 080			4 346 080	0.0%	3.1%	0.0%	96.9%	
GW15	Bottom ash	6 489 080			6 489 080	0.0%	3.1%	0.0%	96.9%	
GW16	Slag	4 859 025			4 859 025	0.0%	0.0%	0.0%	100.0%	
GW20	Organic waste	19 247 851	4 048	298	19 251 600	0.0%	49.2%	0.2%	50.8%	
GW30	Construction and demolition waste	4 482 992			4 482 992	0.0%	52.0%	0.0%	48.0%	
GW50	Paper	2 211 225	57 855	129 374	2 139 706	0.0%	58.0%	0.0%	42.0%	
GW51	Plastic	1 113 362	6 748	20 856	1 099 254	0.0%	43.7%	0.0%	56.3%	
GW52	Glass	2 752 636	38 378	11	2 791 003	0.0%	71.2%	0.0%	28.8%	
GW53	Metals	4 035 929	24 168	527 037	3 533 059	0.0%	80.0%	0.0%	20.0%	
GW54	Tyres	174 640		12 473	162 167	76.4%	23.6%	0.0%	0.0%	
GW99	Other	729 615			729 615	0.0%	9.0%	0.1%	91.0%	
	TOTAL	**55 624 746**	**131 196**	**690 050**	**55 186 188**	**0.2%**	**34.5%**	**0.1%**	**65.2%**	

*Note that percentages may not add up to 100% due to rounding off.

**Note that level of confidence (LOC) of the values in the last column is indicated by the intensity of shading, i.e. high level of confidence in dark shading

As shown above, organic waste contributes to more than 50% of the total of general waste disposed in the country and has a comparative recycling rate of 49%. This waste stream should therefore be prioritised for waste prevention and diversion from landfill. Research indicates that almost one third of all organic waste consists of food waste.

While there is certainly room for improvement, in comparison with many other developed countries South Africa has relatively high rates of recycling for paper, plastics, glass, metals and tyres. At 43%, plastic has the lowest recycling rate and is also associated with significant environmental impacts. Plastic pollution of the terrestrial, 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 municipalities, landfills may receive significantly more of the construction and demolition waste than is required for use as landfill cover, and it also frequently subject to illegal dumping.

2.1.2 Hazardous Waste

Hazardous waste streams are not only 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 (POPs) 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. The following Diagram 1 indicates the % contribution of each category of hazardous waste to the total tonnes.

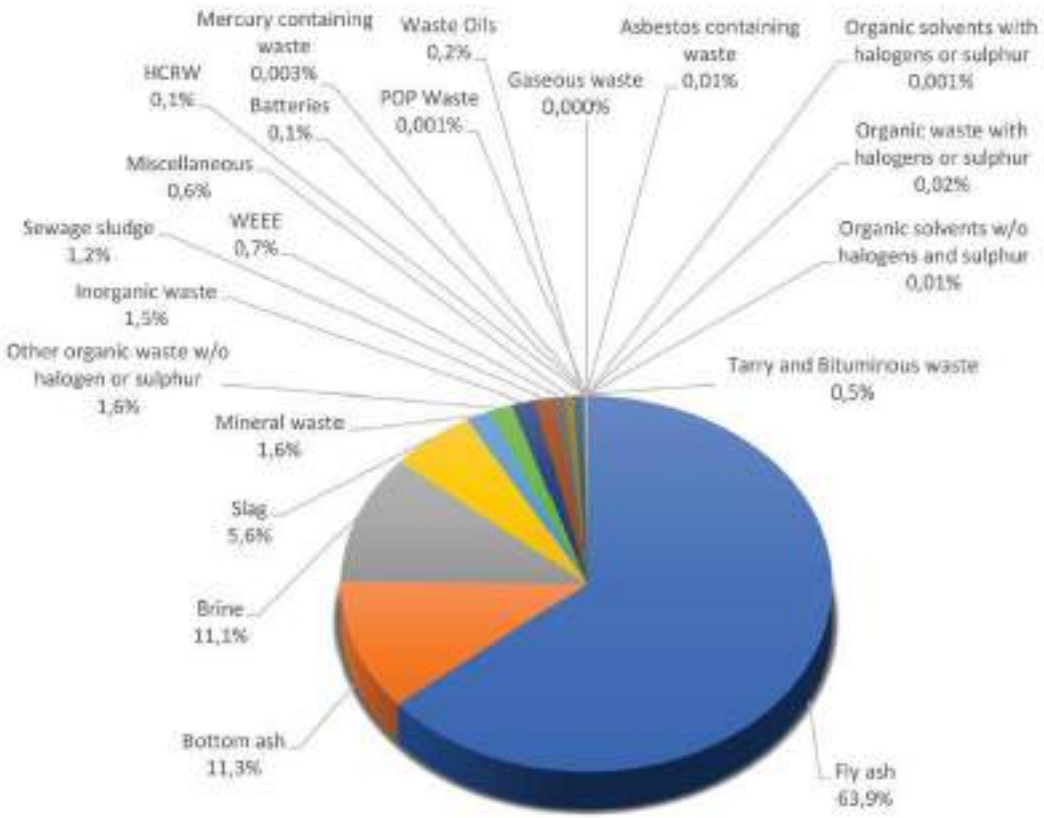
Waste prevention is therefore a priority in relation to hazardous waste, both in terms of amount and toxicity of waste that is disposed to landfill.

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. While they also have beneficiation use, Slag and Brine are waste streams of concern both in terms of tonnage and environmental risks.

Although the tonnage of WEEE is relatively low, recycling rates for WEEE were less than 10% in 2017. This contrasts with lead acid batteries where measures to support EPR have been in place for some time, and much lower rates of disposal to landfill are achieved. This is of concern since WEEE shows

the fastest percentage growth in volume, and it includes reusable components and materials that are both potentially economically valuable and environmentally harmful.

Diagram 1: A Diagram Showing the Hazardous Waste by Management Option in 2017 (SOWR, 2018)



2.1.3 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 their waste 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;
- 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; and
- Efficient dissemination of new, growing information to both public and private sectors that help reveals the benefits of waste prevention actions, including cost-savings, and avoided costs.

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

- The low cost of landfilling is a major issue since it encourages waste generation, as it is currently convenient to landfill;
- 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 EPR as a policy approach for promoting the implementation of waste management hierarchy in relation to particular waste types and generators.

2.1.4 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 of the 33% loss which is 16.5 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.

Due to the growing environmental but also social and economic concerns, food waste is increasingly acknowledged as an urgent issue among governments, businesses, NGOs, academics, and the general public. In response, there is a mounting evidence base on the quantities of food wasted and the related emissions along the food production-consumption chain.

2.1.5 Waste Services

Since, the implementation of the 2011 NWMS has seen some improvement in waste collection and disposal services, including a successful programme to license landfills site. While there is initiation of separation at source programmes in some metropolitan areas, significant backlogs in the delivery of waste services remain. These backlogs tend to reflect historical inequalities – being particularly acute in informal settlements and rural or peri-urban communities. DEFF 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;
- Inconsistent waste collection;
- Pertinent challenges due to non-compliance to permit conditions;
- Burning in landfills;
- Lack of support and cooperation for service providers working with waste in some municipalities;
- Lack of education and awareness in some districts; and
- Waste sector not prioritised in some municipal IDP and budgeting.

The reality is 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.

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, and a need to 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.

2.1.6 Waste collection including separation 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 kerb-side 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; and
- 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; and
- Technology acceptance with respect to facilities and infrastructure that encourage the residents to adopt waste separation behaviour.

The Waste RDI Roadmap 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 rigid, not implemented in the way it was intended or contains loopholes that lead to unintended consequences; and
- 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 NWMS 2020 promotes separation at source through a concerted effort to raise public awareness 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, EPR programmes, 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) that accomplish separation at source.

Household hazardous waste including household hazardous packaged goods and expired medication 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 and the state of knowledge changes. Currently guidelines issued by the DoH 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 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 (AHP) waste, 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 health risk, particularly in unlined landfills and to waste pickers. Potentially, these risks can be mitigated both through product design measures and through recycling and alternative waste treatment options. Recycling of waste diapers requires consumer awareness and measures to separate these products at source which may be difficult to achieve in some circumstances. This should be preceded by safe collection and disposal.

2.2 ALIGNMENT TO THE SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs) were adopted in 2015 by all United Nations (UN) Member States, as part of the 2030 Agenda for Sustainable Development. There are seventeen (17) SDGs which individually and collectively focus on ending poverty, protecting our environment and planet, and improving the social and economic lives of all people.

The NWMS 2020 is explicitly responsive to Sustainable Development Goal 12, i.e. “Responsible Consumption and Production”. However, since all the SDGs are interconnected, the NWMS 2020 is also responsive to other SDGs. A summary of only the SDGs that the NWMS 2020 contributes to is provided in the following Table 2.

Table 2: SDGs and the contribution of the NWMS 2020

SUSTAINABLE DEVELOPMENT GOALS	CONTRIBUTION OF THE NWMS 2020
SDG 1: No Poverty	Through waste management science and technologies that advance sustainable development.
SDG 2: Zero Hunger	Through eradicating food waste.
SDG 3: Good Health and Well-Being	Through minimising waste related environmental factors that contribute to ill-health and preventable diseases.
SDG 6: Clean Water and Sanitation	Through: • Minimising the discharge of wastewater from human activities into rivers/oceans/dams; and • Supporting sustainable management of water to better manage food production, energy and climate change.
SDG 7: Affordable and Clean Energy	Through supporting clean energy infrastructure and technologies that reduce greenhouse gases which cause climate change, harms peoples' health and well-being and damages the environment.
SDG 8: Decent Work and Economic Growth	Through: • Entrenching waste management as a key 'circular economy' (see sub-section 4.2 below) component towards fully sustainable development; • Creating and promoting decent work opportunities in the waste sector and its downstream opportunities e.g. waste beneficiation; and • Promoting the waste management sector as a key contributor to overall economic growth and development.
SDG 9: Industry, Innovation and Infrastructure	Through promoting and supporting sustainable industrialisation that is premised on efficient use of natural resources to improve peoples' standard of living without damaging the environment.
SDG 11: Sustainable Cities and Communities	Through supporting the development of cities and communities in ways that do not harm the environment and that reduces carbon and greenhouse gas emissions.
SDG 12: Responsible Consumption and Production	Through: • Ensuring sustainable production and consumption patterns; • Implementing initiatives that reduce waste, promote re-cycling, re-use; and • Implementing public awareness initiatives.
SDG 13: Climate Action	Through implementing actions that will reduce greenhouse gas emissions, build climate resilience, promote renewable energy.

2.3 ALIGNMENT TO THE NATIONAL DEVELOPMENT PLAN: VISION 2030

The National Development Plan (NDP) is "a plan for the country to eliminate poverty and reduce inequality by 2030 through uniting South Africans, unleashing the energies of its citizens, growing an inclusive economy, building capabilities, enhancing the capability of the State and leaders working together to solve complex problems"[2]. This critical plan, issued in 2012, is aligned to the global commitments of Agenda 2030 and the SDGs mentioned in the previous sub-section.

[2] National Development Plan: Vision 2030, Our Future-Make it Work

The NWMS 2020 is directly aligned to Chapter Five (5) of the NDP, i.e.: ensuring environmental sustainability and an equitable transition to a low-carbon economy. This is critical when faced with the reality that climate change and environmental degradation impacts mostly on the poor.

Reducing carbon emissions is key to mitigating climate change, as is sustainable socio-economic development to ensuring the stability of the country's natural resources, systems and environment. Thus, the NDP proposes that we "break the links between economic activity, environmental degradation and carbon-intensive energy consumption" and address the legacies of the past when "resources were exploited in a way that was deeply unjust and left many communities excluded from economic opportunities and benefits while the natural environment was degraded".[3]

In Chapter Five (5), Vision 2030 for South Africa is described as "By 2030, South Africa's transition to an environmentally sustainable, climate-change resilient, low-carbon economy and just society will be well under way: …"[4]. Included in the proposed actions to achieve this vision is investing in consumer awareness, green product design, recycling, waste-to-energy and other such initiatives that can result in a zero-waste society while building a greener and more environmentally sustainable economy.

The NDP further acknowledges the contribution the waste management sector makes to reducing unemployment, poverty and income inequality; that behaviour change and social values in respect of environmentally responsible consumption is required; and that waste management is an important utilities element of building sustainable communities.

Specifically, the NWMS 2020 responds to the NDP directive of "implementing a waste-management system through the rapid expansion of recycling infrastructure, and encouraging the composting of organic domestic waste to bolster economic activity in poor urban communities" and to the need to "cut down on solid waste disposal".[5]

Implementation of the NDP is realised through Five Year Implementation Plans and Integrated Monitoring Frameworks at a national level, each province's Growth and Development Strategies, and from 2020, the Integrated Development Plans of Metropolitan and District Municipalities. The national level Plan and Framework is formulated as the country's Medium-Term Strategic Framework (see sub-section 1.3 below).

2.4 ALIGNMENT TO THE MTSF PRIORITIES FOR THE 6TH ADMINISTRATION

President Ramaphosa listed seven (7) priorities in his June 2019 State of Nation address which signalled the start of the sixth (6th) administration. These high-level priorities are further unpacked into outcomes and interventions in the Medium-Term Strategic Framework (MTSF) 2019-2024. The DEFF further disaggregates the national priorities and MTSF outcomes and interventions into departmental specific initiatives that are explained in its 5-year Strategic Plan for the period of the 6th administration.

The following Table 3 lists only the national priorities and NDP outcomes that the NWMS 2020 responds to, as well as what this response is.

[3] National Development Plan: Vision 2030, Our Future-Make it Work
[4] National Development Plan: Vision 2030, Our Future-Make it Work
[5] National Development Plan: Vision 2030, Our Future-Make it Work

Table 3: National Priorities, NDP Outcomes and NWMS 2020 response

NATIONAL PRIORITY	NDP OUTCOME	NWMS 2020 RESPONSE[6]
• Economic Transformation and job creation • Education, Skills and Health • A better Africa and World	• Green House Gas emission reduction, • Just Transition to a low carbon economy, • Municipal preparedness to deal with climate change, and • Enhanced national implementation of the Sustainable Development Goals (SDG) Agenda 2030 and Agenda 2063.	• Implementation of the Chemical and Waste Economy Phakisa • Implementation of the Oceans Economy Phakisa • Just transition to a low carbon and circular economy • Environmental Management Education and Awareness campaigns in schools including on waste management • Advancing the SDGs in ten area of waste management • Supporting the implementation of waste management programmes of local government

2.5 LEGISLATIVE FRAMEWORK AND MULTI-LATERAL ENVIRONMENTAL AGREEMENTS (MEAs)

The legislative framework, cooperation agreements and MEAs that inform and guide the approach and directives of the NWMS 2020 is listed in the following Table 4.

Table 4: Legislative Framework and MEAs

LEGISLATIVE FRAMEWORK	MULTI-LATERAL ENVIRONMENTAL AGREEMENTS
• The Constitution of the Republic of South Africa, 1996 • The National Development Plan • National Environmental Management Act, 1998 (Act No. 107 of 1998) • The Waste Act • NWMS • Municipal Systems Act 2000 (Act No. 32 of 2000) • The Waste Act National Domestic Waste Collection Standards 2009 • Industry Waste Management Plans • Waste Tyre Regulations (Stockpile abatement plans) • The Regulations regarding the control of the import or export of waste 2008 • South Africa's Foreign Policy • Strategic Approach to International Chemicals Management (SAICM) • List of waste management activities that have, or are likely to have, a detrimental effect on the environment 2013 • Waste classification and management Regulations	• Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal • Stockholm Convention on Persistent Organic Pollutants (POPs) • Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade • Vienna Convention for the Protection of the Ozone Layer

[6] DEFF Final Strategic Plan 2019/20 – 2023/24

• Norms and Standards for the assessment of waste for landfill disposal • Norms and Standards for the disposal of waste to landfill 2013 • National Standards for the extraction, flaring or recovery of landfill gas 2013 • Regulations regarding the exclusion of a waste stream or a portion of a waste stream from the definition of waste • Regulations for the control of import and export of waste • List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment, 2013 & 15 • National Waste Information Regulations, 2012 • Waste classification and management Regulations, 2013 • Regulations regarding the planning and management of residue stockpiles and residue deposits, 2015 • Compulsory specifications for plastic carrier bags and plastic flat bags, 2003 • Waste Tyre Regulations, 2009 • National Pricing Strategy for Waste Management, 2016	• Montreal Protocol on Ozone Depleting Substances (ODS) • Minamata Convention on mercury • Decisions from International Cooperation Agreements such as African Ministers Conference (AMCEN), African Union (AU), BRICS, South Africa – European Union (SA-EU), etc

3 PURPOSE, SCOPE, KEY PRINCIPLES AND EXPECTED OUTCOMES

This NWMS 2020 is also responding to pollution, waste management practices and the legacy relating to the socio-economic conditions of the people of South Africa. Hence, the purpose, scope, key principles and expected outcomes are based on the following;

*"Worldwide pollution, poor air quality, **bad or absent waste management** affects those living in conditions of poverty most severely. South Africa is no exception and the legacy of apartheid has meant that those living in historically disadvantaged areas shoulder this most acutely".*

Minister Barbara Creecy, Address at
Ecologic Awards,
6 June 2019

3.1 PURPOSE

The overall purpose of the NWMS 2020 is to provide government's policy and strategic interventions for the waste sector and an enabling environment for implementation of the 2017 Chemicals and Waste Phakisa projects.

More explicitly, the NWMS 2020 gives effect to the objects of the Waste Act and thus provides for:

- Institutional arrangements and planning matters i.r.o waste management;
- National norms and standards that regulate waste management by all spheres of government;
- Specific waste management measures;
- Licensing and control of waste management activities;
- Remediation of contaminated land;
- National waste information system;
- Compliance and enforcement;
- Clearly defined roles and responsibilities of all waste management stakeholders;
- A high- level implementation plan with targets, timeframes and accounting and reporting arrangements; and
- A monitoring and evaluation framework.

3.2 SCOPE

The NWMS 2020 applies to:

- All organs of the State that have a responsibility for waste management;
- Private sector organisations, including Small, Medium and Micro Enterprises (SMME's) and Co-operatives (Co-ops) that are involved in, and constitute the waste management sector;
- Civil society organisations involved in waste management, environmental awareness, environmental sustainability and sustainable development; and
- Academia and research institutions that are involved in waste management, research and academic work relating to the three Pillars of the Strategy.

3.3 KEY PRINCIPLES

The following Table 5 lists the key principles underpinning the NWMS 2020 and provides a brief explanation of each principle.

Table 5: Key Principles underpinning the NWMS 2020

PRINCIPLE	EXPLANATION
Waste Minimisation	This refers to avoiding the amount and toxicity of waste that is generated and, in the event that waste if generated, the reduction of the amount and toxicity of the waste that is disposed.
Waste Prevention	This refers to avoiding the generation of waste and avoiding toxicity in waste.
Waste as a Resource	This refers to beneficiating waste through re-use, recycling, treatment and recovery to reduce the amount and the toxicity of waste disposed of.
Sustainable Strategic Partnerships	This refers to government establishing and sustaining collaborative working relationships with non-government role-players involved in

	the management of waste, i.e. private sector, academia, civil society organisations and other development funding institutions.
Environmentally sound socio-economic growth and development	This refers to ensuring that the intent and commitments of the SDGs, NDP are continuously integrated and aligned to all environmental protection considerations, and that environmental protection programmes contribute to improving the socio-economic lives of people.

3.4 EXPECTED OUTCOMES

The following are the outcomes that will be achieved through effective and efficient implementation of the NWMS 2020 by all stakeholders from all sector of society:

- *Prevent waste, and where waste cannot be prevented ensure* –
  40% of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill;
- All South Africans live in clean communities with *waste services that are well managed* and financially sustainable; and
- Mainstreaming of waste a*wareness and a culture of compliance* resulting in zero tolerance of pollution, litter and illegal dumping.

4 STRATEGIC APPROACH

The strategic approach to the NWMS 2020 is guided by the experiences and lessons from both national and other spheres of government in relation to waste management and opportunities that are emanating from addressing waste related challenges. This reinforces the country's response to global issues, while also allowing an opportunity for collaboration of all stakeholders in finding solutions in waste management and in implementing a circular economy.

"Together with all nations of the world, we are confronted by the most devastating changes in global climate in human history. The extreme weather conditions associated with the warming of the atmosphere threaten our economy, they threaten the lives and the livelihoods of our people, and – unless we act now – will threaten our very existence".

President Cyril Ramaphosa, June 2019 State of Nation Address

4.1 INTRODUCTION

The strategic approach of the NWMS 2020 is informed by the:

- Context outlined in Section 2 of the strategy;
- Purpose, key principles and expected outcomes outlined in Section 3 of the strategy;
- Circular economy;
- Waste management hierarchy of the DEFF;
- Critical assessment of the 2011 NWMS; and
- CWE Phakisa and the Good Green Deeds Programme.

4.2 THE CIRCULAR ECONOMY

"There is no waste in a circular economy – when we have finished with something it becomes the raw material for something else"

Minister Barbara Creecy, DEFF Budget Policy Statement 2019/20

A circular economy redefines economic growth by moving away from a take-make-waste industrial model to one that decouples economic activity from the environment and supports a just transition to renewable energy sources.

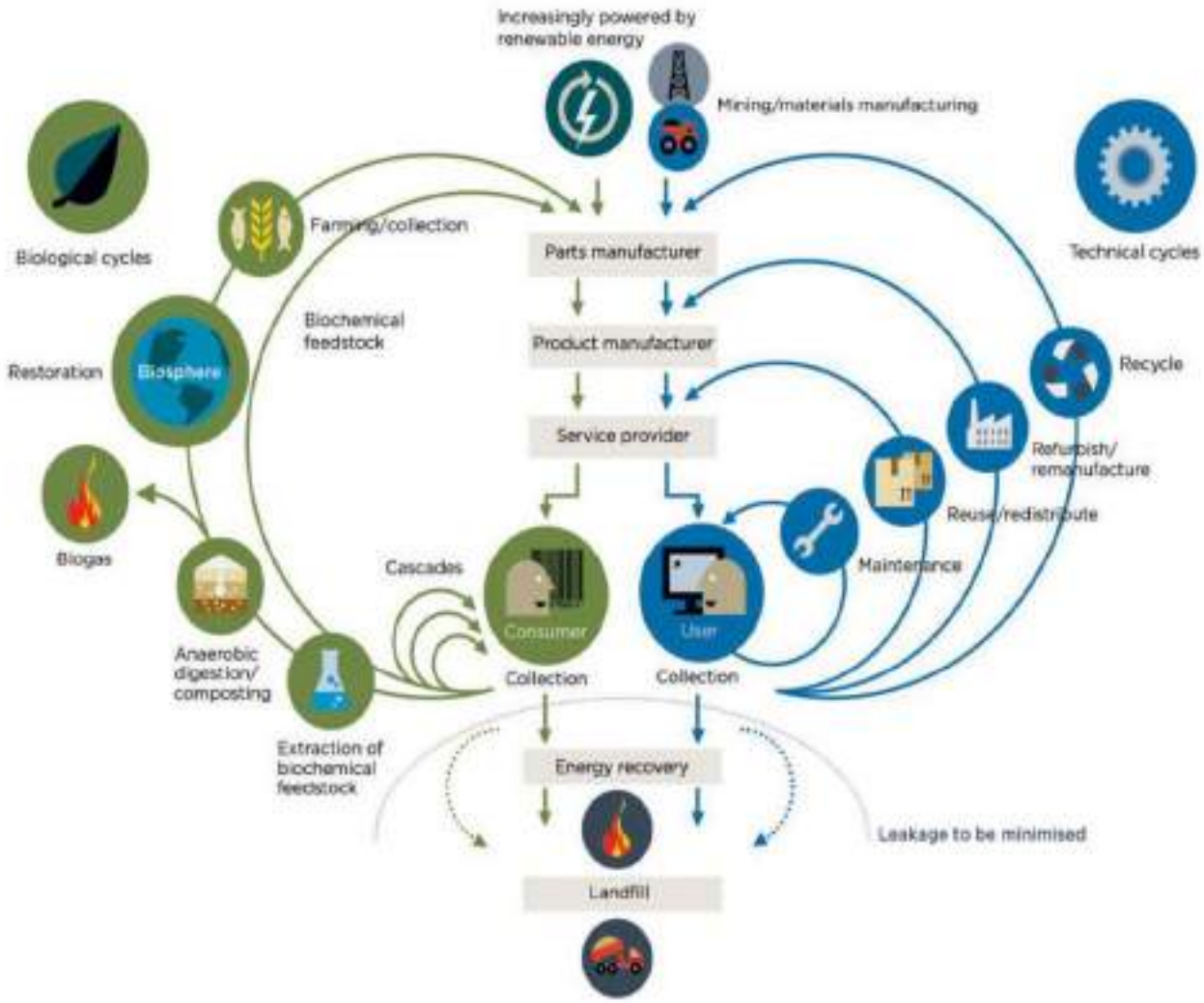
The three key principles of a circular economy are: design out waste and pollution, keep products and materials in use and regenerate natural systems. The DEFF's Chemicals and Waste Phakisa is a key component in the circular economy. Thus, it stands to reason that the circular economy is pivotal in the strategic approach of the NWMS 2020.

The Ellen MacArthur Foundation states that transitioning to a circular economy requires moving beyond making adjustments to reduce the negative impacts of a linear economy to making adjustments that build long-term resilience, generates business and economic opportunities and provides environmental and societal benefits.[7]

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 other measures of Extended Producer Responsibility (EPR). A 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 generated and reduce demand for virgin materials as production inputs, as illustrated in the following Diagram 2.

[7] https://www.ellenmacarthurfoundation.org/circular-economy/concept

Diagram 2: Butterfly Diagram on Circular Economy *Source: Ellen MacArthur Foundation*



The two (2) strategic entry points of the waste sector into waste minimisation and the circular economy is waste prevention and waste as a resource, as briefly explained below.

- **Waste Prevention** – this emphasises avoiding and reducing waste before substances, materials and products are discarded i.e. before they become waste through a focus on the design and packaging of products and cleaner production. Products' environmental impacts are determined at the design phase, while the linear pattern of "take-make-use dispose" can be eliminated if manufacturers of products adopts circularity in the design phase. In terms of the hierarchy of waste management practices, these interventions have the highest priority and will 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 focuses on stimulating 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. Circularity can deliver substantial material savings throughout value chains and production processes, generate extra value, transformation of industry towards climate-neutrality, long-term competitiveness and unlock economic opportunities. In terms of the waste management hierarchy 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 full potential value of waste.

Having these entry points as part of South Africa's strategy for waste minimisation and implementing the circular economy will result in the diversion of waste from landfill and the displacing of demand for virgin materials. The circular economy can significantly reduce the negative impacts of resource extraction and use on the environment and contribute to restoring biodiversity and natural capital. The key challenges for sustainable waste management in a circular economy are the durability, recyclability and reparability of products, the reduction of food and packaging waste that are discarded every year and the massive encouragement of avoidance of waste at household and industry level.

The NWMS 2020 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 Innovation (DSI) and the Department of Trade, Industry and Competition (DTIC) are critical partners in its implementation, as well as other departments with responsibilities and interests in relation to particular waste streams such as the Department of Agriculture, Land Reform and Rural Development (DALRRD), DMRE, Department of Human Settlements, Water and Sanitation (DHSWAS) and the Department of Public Works and Infrastructure (DPWI) as a facilities manager for most government real estate.

Efficient and innovative approaches to the delivery of waste collection and disposal services are critical to leveraging the economic value of waste through increased rates of reuse and recycling. This also applies to 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 EPR, particularly in relation to product design, packaging and the funding of waste management programmes as guided by the National Pricing Strategy for Waste Management (NPSWM).

Waste minimisation is accomplished by waste pickers who perform the crucial first step in extracting recyclable and reusable materials from the waste stream and initiating their revalorisation. Part of the value chain, is the private sector on the basis of opportunities to generate revenue by 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.

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, repair and refurbishment, the processing of recyclables for use 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.

It unfortunately remains true that in general communities where domestic waste collection is minimal or waste services are not provided remain more likely to live in communities in which human health and dignity are impaired by litter and illegal dumping. Furthermore, the working conditions under which many waste pickers contribute to recycling often do not represent decent livelihoods.

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 the NWMS 2020 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 DEFF 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.

The safe disposal of all waste, hazardous and non-hazardous 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.

4.3 THE WASTE MANAGEMENT HIERARCHY

The following Diagram 3 illustrates the waste management hierarchy of the DEFF. The hierarchy is premised on three (3) of the key principles of the NWMS 2020, namely waste minimisation, waste prevention and waste as a resource.

Diagram 3: Waste Management Hierarchy



4.4 CRITICAL ASSESSMENT OF THE 2011 NWMS

The process of developing the NWMS 2020 included a critical status quo assessment of the 2011 NWMS to ensure that the successes are built on, lessons learned are taken into account, and gaps that the revised strategy must address, are identified. A detailed 2011 NWMS Stats Quo Assessment is attached to this NWMS 2020 as an Appendix. However, the key elements of the assessment which have informed the strategic framework of the NWMS 2020 is summarised below;

a) To a large extent, the 2011 NWMS 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 the Waste Act, such as the provisions around IWMPs, provisions for contaminated lands, and IndWMPs.

The NWMS 2020 significantly changes this approach to one that:

- Supports innovation and partnership with the private sector;
- Collaborates with other departments on the beneficiation of waste; and
- Supports the provincial and local spheres of government to build their capacity in respect of their concurrent waste management functions, and generally, builds sustainable long-term strategic partnerships with all waste sector stakeholders, including communities

b) A high-level presentation of the assessment conducted of the 2011 NWMS reveals that implementation of its eight (8) goals and associated targets vary from one goal to the next. The findings on the 8 goals are grouped in pairs as follows:
   - The goal on the provision of measures to remediate contaminated land and the goal to ensure that people are aware of the impact of waste on their health, well-being and the environment, fared the best;
   - The goal on promotion of waste minimisation, re-use, recycling and recovery of waste and the goal on ensuring effective and efficient delivery of waste services, fared second best;
   - The goal on achieving integrated waste management planning and the goal on growing the contribution of the waste sector to the green economy were, fared third best; and
   - The goal on establishing the effective compliance with and enforcement of the Waste Act and the goal on ensuring sound budgeting and financial management for waste services, fared the worst. The situation has seen improvement in case where the administrative notices were issued, such in non-reporting in line with the requirements for the waste information regulations.

Although implementation of the 2011 NWMS focus of waste diversion from landfill has been on recycling and while the country has achieved recycling rates that compare favourable to other developed countries, progress in diverting waste from landfill has been limited with a relative large percentage of waste continuing to be disposed to landfills. 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. It also represents a failure to decouple economic activity from environmental impacts. Additionally, the recycling industry is, to a large extent, built on the collection of recyclables by the informal sector without an enabling policy environment on the livelihoods of waste pickers and norms and standards that advance radical economic transformation and sustainable development.

Waste minimisation opportunities referred to in waste management need to be more actively addressed in the revised strategy, particularly in terms of waste prevention.

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.

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.

The NWMS 2020 addresses the above-mentioned by, amongst others:

- Providing a service delivery model based on the waste management hierarchy inclusive of strategic pillars that uphold the strategy (see next section of the strategy);
- Developing more specific objectives, actions and targets for the different levels of the waste management hierarchy and particular waste streams e.g:
  - promoting alternatives to landfilling, composting and energy recovery options,
  - promoting approaches to the design and packaging of products that reduce waste and encourage reuse, repair and recycling.
  - Advancing residential separation at source programmes
  - Facilitating the development of skills within the waste sector through supporting post-graduate qualifications in waste management, such as waste engineering degrees;
- Strengthening and expanding the role of waste pickers e.g. through integrated separation at source, in the waste management system and recycling economy, and supporting markets for source separated recyables;
- Aligning the roles and responsibilities between various enforcement and compliance authorities;
- Supporting local government to implement integrated waste management plans and services that better address the constraints and varying circumstances faced by local government; and
- Facilitating and implementing a more wide-ranging and better co-ordinated public awareness programme.

4.5 CHEMICAL AND WASTE ECONOMY (CWE) PHAKISA AND THE GOOD GREEN DEEDS PROGRAMME

The CWE Phakisa is a Presidential programme designed to support the implementation of the NDP and boost the national economy through developing the waste management sector by unlocking economic opportunities and reducing unnecessary negative environmental impacts. The main objectives of the CWE Phakisa are:

- Waste diversion to landfill;
- Job creation and SMME development;
- Reducing negative environmental impacts;
- Formalization and protection of informal workers;
- Accelerate innovation and commercialise existing R&D; and
- Contribution to South Africa's Gross Domestic Product (GDP) and economic transformation.

There were 20 initiatives that were identified in CWE Phakisa in 2017. While the key focus of the CWE Phakisa is on diversion of bulk industrial from going to landfill and removal of hazardous waste from the environment, relevant initiatives in the municipal waste management sphere include:

- Unlocking challenges and opportunities in e-waste;
- Separation of waste at source;
- Increasing plastic recycling rates through the Introduction of materials recovery facilities and pelletisation plants;
- Construction and Demolition (C&D) waste recycling by supporting the development of enterprises producing building aggregates and other construction inputs from C&D waste;
- Improving the packaging guidelines through compilation and update of packaging design guidelines; and
- Support the development of SMMEs in the waste management value chain.

The CWE Phakisa is a demonstration of South Africa's commitment to the implementation of circular economy, while creating jobs and diverting waste from going to landfill sites.

The Good Green Deeds Programme focuses on mobilising South Africans to become more environmentally conscious by managing waste responsibly and keeping their neighbourhoods green, clean and safe. The overall objective of the programme is a Clean South Africa free of litter and illegal dumping, i.e. a cleaner and more environmentally presentable country.

5 STRATEGIC PILLARS OF THE NWMS 2020

The Three (3) Pillars of the NWMS 2020 can in the context of the strategy, the purpose, expected outcomes and performance indicators be described as follows;

''In line with the recently adopted Outcomes-Based planning approach of government, the NWMS 2020 is premised on three (3) Outcomes supported by three (3) Strategic Pillars, namely Waste Minimisation, Effective and Sustainable Waste Services and Compliance, Enforcement and Awareness

Each Pillar has a strategic thrust, pillar specific focus areas and key actions which will be monitored in terms of performance indicators.

Collectively, the strategic pillars with their respective outcomes and interventions give effect to the international and national imperatives detailed in Section 2 on the Context of the Strategy, the Purpose and Expected Outcomes explained in Section 3 and the Strategic Approach outlined in Section 4."

Minister Barbara Creecy, NWMS 2020

5.1 PILLAR 1: WASTE MINIMISATION

5.1.1 Strategic Thrust

The strategic thrust of this pillar is:

- Minimising the impact of waste and especially plastic packaging in our coasts, rivers, wetlands and our human settlement environments, by amongst others, diverting waste away from landfill;
- Increasing re-use, recycling, recovery and alternative waste treatment; and
- Maximising the role of the waste sector in the circular economy.

A critical enabler of this pillar is the building of long-term collaboration and partnership between government and the private sector.

5.1.2 Expected Outcome/s

The long term expected outcome is "Zero Waste going to Landfill". This outcome is represented in the short, medium and long term in the following Diagram 5.

Diagram 5: Strategic Pillar 1: Short, Medium and Long Term Expected Outcomes



5.1.3 Pillar 1 Focus Areas

Waste Minimisation has two (2) strategic entry points: namely Waste Prevention and Managing Waste as a Resource as depicted in the following Diagram 4, and the focus areas of Pillar 1 located within these entry points are explained in the following Table 6.

Diagram 4: A Diagram Showing the Waste Minimisation Activities

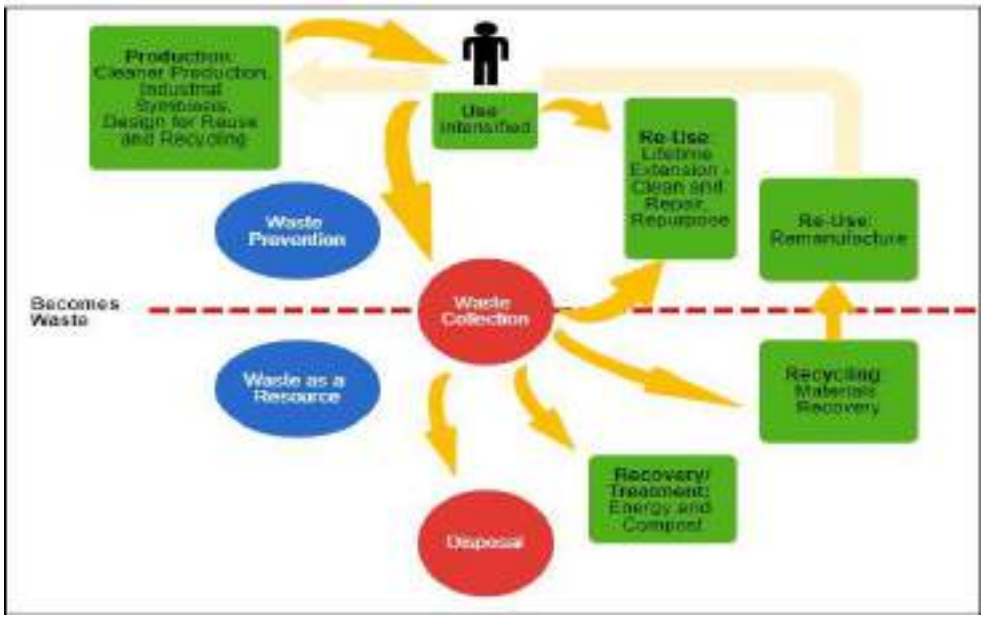


Table 6: Pillar 1: Focus Areas

FOCUS AREAS	ENCOMPASSES AND INCLUSIVE OF WASTE MINIMISATION
Create an enabling environment	• Waste management principles and measures that supports waste prevention, extended producer responsibility, circular economy and waste beneficiation by the private sector - including in the areas of resource extraction, product design, production and manufacturing, retail and consumption; • Measures that facilitate innovation, new technologies and opportunities and for entrepreneurship in the sector; • Align policy and regulations across different government departments that impact on the management of waste in different sectors to simplify, consolidate and accelerate processes for environmental authorisations; • Measures (e.g. incentives or subsidies) primary for EPR schemes that enhance the commercial viability of recycling and beneficiation including by addressed the major costs associated with transporting waste especially from local municipalities; • Appropriate Economic Instruments (EI) such as Advanced Recycling Fees (ARFs) in the context of Extended Producer Responsibility (EPR) schemes; and • Recognise and classify food waste is general waste which can then be reported and accounted for.
Build sustainable partnerships with all government and non-government role-players	• Partner with private sector organisations in the development and implementation of the afore-mentioned measures, and the co-regulation of waste streams wherever appropriate; • Enhance the capacity of local government structures to implement their waste collection and disposal mandate within the context and framework of the afore-mentioned principles; and • Provide oversight of local government to improve waste management performance.
Minimise general waste streams from landfill	• Prioritise streams based on Table 1 in Section 2.1 of this Strategy, as follows o Organic waste (contributes more than 50% of general waste disposed and has a comparative recycling rate of 49%. Research indicates that almost one thirds of all organic waste consists of food waste), o Recycling of paper, plastics, glass, metals and tyres. (currently recycling of plastics has the lowest recycling rate at 43% yet is associated with significant environmental impacts, and o Construction and demolition waste (large waste stream with numerous reuse options already identified including as landfill cover).
Minimise hazardous waste streams	• Prioritise based on Diagram 1 in Section 2.1 of this Strategy, in terms of their volume, toxicity and the environmental risks associated with their treatment and disposal, as follows:

	○ Waste from the generation of electricity from coal (contributes 75% of total volume of hazardous waste - Fly-ash @ 66% and bottom ash @ 9%), ○ Slag (5.6%) and Brine (11.1%), and ○ Waste, Electric and Electronic Equipment (recycling rates were less than 10% in 2017 but shows the fastest percentage growth in volume)
Advance cleaner production and EPR	• Collaborate and partner with the National Cleaner Production Centre of South Africa (NCPC-SA) to promote implementation of resource efficiency, cleaner production methodologies, reducing energy, water and materials usage and improving waste management by industry; • Enhance the work of the Waste Management Bureau i.r.o.: ○ implementation of matters delegated to it, ○ promoting and facilitating minimisation, re-use, recycle and recovery of waste, ○ providing specialist support and advice for waste management plans, tools, instruments, processes, systems, norms and standards and capacity building programmes, and ○ Develop and implement EPR schemes in partnership with the Waste Management Bureau. ○ The objective of EPR schemes is to prevent the targeted products and materials from being disposed as waste.
Prevent Food Waste	• Develop and implement a focused strategy on preventing food waste that: ○ includes increasing awareness on the impact of food waste, ○ is aligned to implementation of the Chemicals and Waste Economy (CWE) lab outcomes, ○ strongly integrates different disciplinary perspectives, and ○ maps the determinants of food waste generation to deepen the understanding of household practices and helps design food waste prevention strategies.
Advance Waste as a Resource	• Expand the collection of recyclables in secondary cities, small towns and rural municipalities; • Increase co-ordination and planning of waste streams and infrastructure at district and provincial level; • Generate additional revenue e.g. through fiscal support/conditional grant from National Treasury, subsidies from EPR measures and infrastructure, etc.; • Implement the CWE Phakisa outcome i.r.o. waste infrastructure, promoting separation at source, establishing Material Recovery Facilities (MRFs) and Refuse Derived Fuel (RDF) plants, and increased recycling and beneficiation of industrial waste, construction and demolition waste and WEEE; • Advance organic waste as a resource in the form of: ○ Composting – large scale commercial operations and community level initiatives that can be linked to job creation and food security initiatives, ○ energy recovery (production of biogas from anaerobic digestion), ○ recovery of biogas/landfill gas from existing landfills to generate electricity and/or be treated and upgraded to the standard of compressed natural gas (CNG) and as transport fuel; and • Advancing beneficiation of construction and demolition waste in the form of: ○ landfill cover, ○ crushing and recycling to create bricks, ○ aggregate in the construction of roads, and ○ developing norms and standards for the beneficiated products
Increase technical capacity and innovation for beneficiation of waste	• Support technological innovations in relation to industrial processes; • Support innovations in relation to conceptualising, planning and delivering waste services; • Finalise policies on recovery of energy from waste; • Conduct further research into energy recovery applications for paper and plastic; • Conduct research into the desirability and feasibility of alternatives to plastic for single-use applications; and • Increase the number, and build the capacity, of waste engineers working in local government.

5.1.4 Strategic Role-players

Key strategic role-players i.r.o Pillar 1 include the DEFF, DSI, DTIC, CSIR, NCPC-SA, TIA, DMRE, DALRRD, Waste Management Bureau, CWE Phakisa team, relevant local government departments, Department

of Public Works, Department of Transport, National Treasury, Department of Health, private sector organisations/representative structure, civil society organisations.

5.2 PILLAR 2: EFFECTIVE AND SUSTAINABLE WASTE SERVICES

5.2.1 Strategic Thrust

The strategic thrust of this pillar is:

- Recognising and addressing the very different circumstances and waste management challenges that exist between local government authorities;
- Developing and implementing flexible approaches to service delivery that incorporates the informal sector while addressing local needs;
- Guiding public investment and partnerships with the private sector in waste management infrastructure and projects; and
- Ensuring that the delivery of waste services contributes to sustainable development.

A critical enabler of this Pillar is the building of strong co-operative governance relationship between the three spheres of government and specifically local government.

5.2.2 Expected Outcome/s



5.2.3 Pillar 2 Focus Areas

The focus areas of Pillar 2 are explained in the following Table 7.

Table 7: Pillar 2: Focus Areas

FOCUS AREAS	ENCOMPASSES AND INCLUSIVE OF EFFECTIVE AND EFFICIENT WASTE SERVICES
Integrated Waste Management Planning	• Regional planning of waste management infrastructure such as landfills with MRFs and drop-off centres; • Reviewing adjusting municipal budgets towards effective and sustainable waste services; • Clarify and strengthen the role of provinces in terms of integrated planning, review and monitoring of metro and local government integrated waste management plans, and reporting requirements to national government; • Five (5) year Provincial Integrated Waste Management Plans approved by the Minister of DEFF and reported on annually. Annual reports to include aggregated data on provincial waste streams, service delivery and infrastructure rolled up from local and metro IWMPs; and • Develop and annually update a waste management planning reference guide and on-line knowledge sharing platform that will include planning tools, guidelines, models and case studies. • Provide support to municipalities through amongst other initiatives, the Cities Support Programme by NT
Producers with the concurrence of Municipalities to provide recycling drop-off/buy-back/storage centres	• Generate additional revenue e.g. through levies or other EPR measures and engaging with National Treasury (NT) for financing public investment in drop-off/buy-back centres; • Integrate IWMPs and implementation of EPR and the circular economy in identified waste streams such as the packaging industry; • Support Provinces and the private sector to plan recycling infrastructure based on modelling of waste volumes and transport costs; and

	• Develop a full cost accounting model of waste services and infrastructure that considers social and environmental costs and benefits.
Waste Collection including separation at source	• Develop and implement initiatives that leverage waste beneficiation; • Implement separation at source initiatives e.g. separate bin services or kerb-side collections, direct delivery of specific wastes to drop-off facilities; • Implement a national public awareness campaign on the benefits of recycling, EPR programmes, and where possible, economic incentives; • Develop and implement innovative models through EPR and other approaches and tools to engage the informal sector (waste pickers) in the delivery of separation at source; and • Support capacity development in waste innovation, disseminate information about new approaches, share lessons learned and leverage existing forums.
Safe Management of hazardous household wastes and absorbent hygiene products waste	• Develop product design measures and alternative waste treatment options; and • Develop norms and standards for safe collection and disposal.

5.2.4 Strategic Role-players

Key strategic role-players i.r.o Pillar 2 include the DEFF, NT, the South African Local Government Association (SALGA), Department of Cooperative Governance and Traditional Affairs (COGTA), the South African Cities Network (SACN), the DSI and Innovation Hub through the Waste RDI Road Map, private sector organisations and civil society organisations.

5.3 PILLAR 3: COMPLIANCE, ENFORCEMENT AND AWARENESS

5.3.1 Strategic Thrust

The strategic thrust of this Pillar is:

- Mitigating and preventing the environmental and social damage caused by waste due to non-compliance;
- Increasing compliance to local, provincial, national and international legislation and standards;
- Mitigating and preventing pollution, littering and illegal dumping of waste; and
- Improving the visibility and awareness of the socio-economic and environmental benefits of compliance, effective waste management and environmentally compliant infrastructure.

5.3.2 Expected Outcome/s



5.3.3 Pillar 3 Focus Areas

Pillar 3 focuses on managing the environmental impact of waste and preventing pollution through changes in behaviour and attitude that lead to a culture of compliance with acceptable local and international standards taking root amongst citizens, businesses and government.

The focus areas of Pillar 3 are explained in the following Table 8.

Table 8: Pillar 3: Focus Areas

FOCUS AREAS	ENCOMPASSES AND INCLUSIVE OF COMPLIANCE, ENFORCEMENT AND AWARENESS
Compliance promotion and awareness	• Is a distinct phase within the regulatory cycle and thus separate from the compliance and enforcement phases; and • Publicise success stories of compliance and enforcement.
Waste Services Infrastructure Provision	• Increasing access to municipal infrastructure e.g. skips to discourage illegal dumping; • Presence of public bins that are regularly emptied; and • Municipal cleaning of streets, particularly in commercial districts.
Enforcement	• Consistent implementation of by-laws on littering and illegal dumping; • Application of other compliance measures to address other contraventions and non-compliances; • Enhancing capacity to enforce the Waste Act and International Agreements; • Increase the number of Environmental Management Inspectors (EMIs) actively involved in monitoring compliance with and enforcing the Waste Act; • Local government authorities to regularly report their compliance and enforcement activities as a condition to their designation as EMIs; • Invest in national legal, compliance and enforcement protocol for waste and investigatory capacity to provide strategic support to EMIs in high profile enforcement cases; and • Continue engagements with relevant role-players related to enforcement of waste legislation, including international organisations.
Awareness and Community Participation	• Awareness campaign using all forms of media at national, provincial and local levels; • Outreach and clean-up campaigns in schools and communities; • Implementing the national communication and awareness campaign across all media; and • Build stakeholder partnership to raise awareness of marine and coastal pollution in and around riparian and coastal environments as well as the business community.
Reduce littering and illegal dumping	• Measures to reduce illegal littering and dumping to be included in all integrated waste management plans and should include targeted awareness and community participation in waste management and prevention of littering; and • Leveraging national media and DEFF budget that is available for community-based initiatives around litter and illegal dumping that is focused on micro-grants for equipment and training.
Ensure municipal landfill sites and waste management facilities comply with licensing requirements	• Develop and implement a strategic approach to addressing non-compliant municipal landfill sites including the application of fiscal measures such as a landfill tax intended to correct the cheaper rate of landfilling, while generating revenue for improving compliance, monitoring and developing alternatives to disposal to landfill.

5.3.4 Strategic Role-players

Key strategic role-players i.r.o Pillar 3 include the DEFF, enforcement agencies such as INTERPOL, South Africa's NPA, SAPS, South African Revenue Service and the Road Traffic Management Corporation (RTMC), COGTA, SALGA, NT, National Compliance Forum, private sector organisations and local government structures.

6 KEY INTERVENTIONS AND EXPECTED OUTCOMES

The three outcomes of the NWMS 2020 is a consolidation of the eight (8) goals that were in the 2011 NWMS. Likewise, the actions linked to achieving each outcome in the NWMS 2020 replaces the targets of the 2011 NWMS.

The three outcomes as expressed in Section 5 above, are:

- OUTCOME 1 – Pillar 1*:* Prevent waste, and where waste cannot be prevented ensure - *40% of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.*

  This outcome is supported by Pillar 1 which focuses on waste minimisation and waste prevention, including measures such as Extended Producer Responsibility (EPR) and industrial symbiosis. As such it consolidates elements of Goals 1 from the 2011 NWMS.

- OUTCOME 2 – Pillar 2*: All South Africans live in clean communities with waste services that are well managed and financially sustainable.*

  This outcome is supported by Pillar 2 focuses on the effective and efficient delivery of waste services including separation of waste at source, integrated waste management planning and reporting, provincial IWMPs, provincial oversight and reporting on local IWMPs and improving the quality of waste sector information. As such it consolidates elements of Goals 1, 2, 6 of the 2011 NWMS. Producers would support separation at soure through disbursement of EPR fees towards post-consumer waste collection and towards waste reduction, reuse, recycling and recovery.

  OUTCOME 3 – Pillar 3: *Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping*

  This outcome is supported by Pillar 3 which focuses on improving levels of compliance with the Waste Act by addressing the issues of littering and illegal dumping and implementing awareness programmes. It links compliance with awareness. As such it consolidates Goals 4, 7 and 8 of the 2011 NWMS.

The following Table 9 provides the key interventions that will be implemented in respect of each of the three (3) Outcomes.

In addition to the giving effect to the SDG's, NDP and national socio-economic development and MTSF priorities, the interventions also respond to the following objects of the Waste Act:
Outcome 1:

- 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; and
- Securing ecologically sustainable development while promoting justifiable economic and social development.

Outcome 2:

- Promoting and ensuring effective delivery of waste services; and
- Achieving integrated waste management reporting and planning.

Outcome 3:

- Ensure that people are aware of the impact of waste on their health, well-being and the environment; and

- 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.

Table 9: NWMS 2020 Outcomes and Actions

STRATEGIC PILLAR	OUTCOME	KEY INTERVENTIONS
Waste Minimisation	40% of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.	• Prevent waste generation through cleaner production, industrial symbiosis and extended producer responsibility; • Prevent Food Waste; • Increase re-use, recycling and recovery rates; • Divert organic waste from landfill through composting and the recovery of energy; • Divert construction and demolition waste from landfill through beneficiation; and • Increase technical capacity and innovation for beneficiation of waste.
Effective and Sustainable Services	All South Africans live in clean communities with waste services that are well managed and financially sustainable	• Separate waste at source; • Safe and environmentally sustainable disposal of hazardous household waste; • Cities Support Prgramme Implementation; and • Effective integrated waste management planning.
Compliance, Enforcement and Awareness	Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping	• Reduce Pollution, littering and illegal dumping; • Enhance capacity to monitor compliance and enforce the Waste Act and International Agreements; and • Ensure municipal landfill sites and waste management facilities comply with licensing requirements.

The actions associated with each intervention is presented in the NWMS 2020 Implementation Plan in the following section of the strategy.

7 MONITORING AND EVALUATION FRAMEWORK

Whilst the Waste Act requires that the NWMS be revised every 5 years, the 2020 NWMS presents the following monitoring and evaluation measures:

- Annual reporting systems will be established to review progress – and where necessary, to adjust targets or actions based on new information or new developments within the sector;
- Provinces will provide DEFF with annual progress reports regarding implementation of provincial IWMPs. The Provincial Report must reflect progress in the implementation of IWMPs by local government, who will report annually to the relevant provincial Member of Executive Council (MEC). SAWIS will develop guidelines for provinces and local government on the content and format of annual reporting on IWMPs;
- Databases that record compliance and enforcement activities, such as the National Environmental Compliance and Enforcement Report will also be utilised for reporting; and
- The DEFF is responsible for monitoring the implementation of EPR schemes developed by industry. Reporting requirements for these plans will be aligned with SAWIS.

Effective reporting on the implementation of IWMPs and EPR programmes should provide a steadily improving picture of the status and outcomes of both private and public investments in waste management services and infrastructure. The DEFF will also work with the private sector at sector and sub-sector level to identify and address unnecessary regulatory barriers related to current challenges experienced by industry.

Several national departments have a significant role to play in the implementation plan of the NWMS 2020. The DEFF will establish the 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 2020 NWMS.

8 IMPLEMENTATION PLAN

The implementation plan:

- Provides a concise summary of the key interventions and actions to achieve the three (3) outcomes of the NWMS 2020;
- Includes pillars, performance indicators, targets and timelines for each action; and
- Lists the stakeholders involved in the Implementing Agents' Column, with the lead authority's/organisation's name appearing first.

Where relevant, the outcome targets for the NWMS 2020 use the 2018 State of Waste Report as the baseline. For instance, this means that the target for reducing waste disposal to landfill by 40% within 5 years 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.

PILLAR 1: WASTE MINIMISATION **OUTCOME 1: 40% *of waste from diverted from landfill within 5 years; 55% within 10 years; and at least 70% within 15 years leading to Zero-Waste going to landfill.***					
KEY INTERVENTION	**ACTION/S**	**PERFORMANCE INDICATORS**	**TARGETS**	**TIMELINE**	**IMPLEMENTING AGENT/S**
Prevent waste generation through cleaner production, industrial symbiosis and extended producer responsibility	Develop and implement EPR schemes for priority wastes (i.e. WEEE, Paper and Packaging and Lighting) that includes measures for cleaner production, industrial symbiosis and extended producer responsibility.	(i) Number of EPR schemes finalised, adopted and implemented. (ii) Number of EPR meeting or exceeding performance targets within 5 years	(i) Thee (3) x EPRs for WEEE, Paper and Packaging and lighting (ii) % Reduction of waste disposed to landfill (as per outcome 1); toxicity of waste streams; waste in manufacturing and across its value chain	(i) 2021 (ii) 2025	DEFF CSIR, Producers and Industry Associations
	Strengthen the capacity and national reach of the NCPC-SA through establishing waste symbiosis programmes in all provinces	(i) Number of Provinces with well established Industrial Symbiosis Programmes (ii) Increase the training and technical support provided by NCPC-SA with a special focus on women, youth and people living with disabilities	(i) a. 5 x provinces – Gauteng, KZN, E.Cape, Mpumulanga, North West b. 3 x provinces – Free State, Limpopo, N.Cape (ii) 15 of training and technical support programmes implemented by the NCPC-SA	(i) a. 2021 b. 2022 (ii) 2025	NCPS-SA DEFF, DSI (TIA and Waste RDI Roadmap), provinces, industrial development zones, business chambers and industry associations
	Minimise the production and retail of single-use plastics for consumption within the country and replace the products with bio-degradable alternatives	Single use plastics to be covered by generic reference to the National Pricing Strategy for Waste Management	80% reduction in production of single use plastics not covered by deposit scheme under the National Pricing Strategy	2025	DEFF DTIC, DSI (TIA and Waste RDI Roadmap), Producers and other affected industries

	Standardise design and packaging of sustainable products that reduces production of waste, maximises resource recovery for recycling or re-use and supports consumption of materials and products with a prolonged life	(i) Waste Streams that utilise most resources with high potential for circularity identified (ii) Circular economy principles implemented across the waste management value chain	(i) and (ii) National Circular Economy Action Plan developed and implemented	(i) and (ii) 2023	DEFF DTIC, industry associations, research institutions,
Prevent Food Waste	Develop and implement a strategy for reducing food losses and waste prior to retail and that is associated with harvesting, processing and transport of food with food producers and retailers	(i) Strategy developed (ii) Annual reporting on implementation of the strategy	(i) 1 x adopted Strategy ready for implementation (ii) 1 x annual report each financial year	(i) 2021 (ii) Annual (each financial year)	DALLRD DEFF, food producers and retailers
	Improve consumer awareness and standards for labelling and marketing of perishable foodstuffs and "ugly" fruit and vegetables	(i) Marketing and labelling standards reviewed and revised (ii) Consumer Awareness Campaigned implemented	(i) 1 x set of Revised standards adopted and implemented (ii) Launch of awareness campaign	(i) and (ii) 2021	SABS DEFF, DoH, food retailers, DTIC, National Consumer Commission (NCC)
	Develop guidelines, norms and standards for redistributing surplus foods and composting of spoilt foods	(i) Guidelines/Norms and Standards developed and implemented (ii) Reduction in food losses prior to retail and food waste in the retail sector	(i) 1 x Guidelines/ norms and standards adopted and implemented (ii) 30% reduction in food waste	(i) 2022 (ii) 2025	DEFF DoH, food retailers, the hospitality sector and NPO's
Increase re-use, recycling and recovery rates	Develop and implement a public procurement framework to support recycling, encompassing requirements for recycled content	Achievement of procurement targets for recycled content in the public sector	1 x Procurement targets gazetted	2021	DEFF NT, COGTA, SALGA and Municipalities
	Establish MRFs and Recyclate processing plants as Public Private Partnerships based on regionally integrated waste management planning	Number of new MRFs and recyclate processing plants established	All new and existing landfills with longer airspace/years to include MRFs	2021	DEFF. Producers, Provinces, local government, SALGA, COGTA, NT

	Develop and implement industry standards that align technology requirements between primary producers and recyclers of all materials, by ensuring that the design and packaging of products maximise the value of the materials that circulate within the economy	(i) (ii)	Number of Standards developed and implemented % Increase in materials recovery and recycling rates	(i) (ii)	1 x Industry standards adopted and implemented 70% of paper recycled, 60% of plastic recycled, 90% of glass recycled, 90% of metals recycled and 40% of fly-ash recycled	(i) (ii)	2021 2025	DEFF Waste Bureau, DTIC, Research Institutions, NGOs, SABS, industry associations/partners, DSI, Innovation Hub, DoE, Eskom, Transnet and Producers
Divert organic waste from landfill through composting and the recovery of energy	Develop and implement an enabling environment to produce biogas through anaerobic bio-digestion of organic waste treating sewage and organic domestic waste	(i) (ii) (iii)	Number of Statutory and regulatory framework developed Number of biogas projects involving organic waste Volume of biogas produced from waste	(i) (ii) (iii)	1 x Strategy and Regulatory framework adopted and ready for implementation 5number of projects implemented 40% biogas produced from organic waste	(i) (ii) (iii)	2022 2023 2025	DEFF DMRE, DSI, DHSWAS, Biogas Association
	Develop and implement biogas digester projects linked to the National School Nutrition Programme	(i) (ii)	Number of MoU's signed Number of schools with biogas digesters	(i) (ii)	1 x MoU with DBE signed and implemented 50 schools have biogas digesters	(i) (ii)	2021 2024	DEFF DBE, DMRE
	Include and implement organic waste technologies in local government IWMPs	(i) (ii) (iii) (iv)	Number of metros implementing organic waste technologies Number of districts implementing organic waste technologies Number of municipalities implementing organics waste technologies Number of new composting projects identified and implemented	(i) (ii) (iii) (iv)	All Metros All districts All municipalities 35 projects	(i) (ii) (iii) (iv)	2021 2023 2025 2025	DEFF Provinces, local government, SALGA, COGTA, other stakeholders

Divert construction and demolition waste from landfill through beneficiation	Develop and implement best practice guidelines and standards for the re-use of C & D waste in roads and other building materials e.g. bricks	(i) C & D waste only disposed to landfill as cover (ii) Number of C & D Beneficiation	(i) Guidelines and Standards approved and implemented (ii) 20 C & D beneficiation programmes implemented	(i) 2021 (ii) 2024	DEFF SANRAL SABS Construction Industry Association
Increase technical capacity and innovation for the beneficiation of waste	Promote research and Innovation in the waste sector	(i) Number of MoU's signed (ii) Number of waste beneficiation projects supported by TIA (iii) Number of research reports published	(i) 1 x MoU with DSI signed and implemented (ii) 25 projects supported (iii) 2 research reports published annually	(i) 2021 (ii)	DEFF DSI (TIA and the Waste RDI RoadMap)
	Review and update or developed new legislation/instruments to keep abreast of technical developments and remove unnecessary regulatory barriers to the uptake of new technologies	Number of instruments reviewed and/or developed	4 Instruments adopted and implemented	2022	DEFF DSI (TIA and the Waste RDI Roadmap), DPME
	Increase technical capacity and skills in the waste sector	(i) Number of waste management graduates prioritising women, youth and people living with disabilities (ii) Number of waste management professionals in the public sector	(i) 120 new graduates prioritising women, youth and people with disabilities (ii) 20 waste management professionals in public sector prioritising women, youth and people with disabilities	(i) 2023 (ii) 2024	DSI (TIA and the Waste RDI Roadmap) Tertiary institutions

PILLAR 2: EFFECTIVE AND SUSTAINABLE WASTE SERVICES

OUTCOME 2: ***All South Africans live in clean communities with waste services that are well managed and financially sustainable***

KEY ACTION	SUB-ACTIONS	PERFORMANCE INDICATORS	TARGETS	TIMELINE	IMPLEMENTING AGENT/S
Separate Waste at Source	Integration of waste pickers into the waste management system	(i) Number of Integration guidelines developed (ii) Number of metros with integration programmes in place (iii) Number of secondary cities with integration programmes in place (iv) Number of sustainable jobs/decent livelihoods created in collecting recyclables	(i) 1 x Guidelines adopted and implemented (ii) All metros (iii) All secondary cities (iv) 500 jobs created/decent livelihoods created prioritising women, youth and persons living with disabilities	(i) 2020 (ii) 2021 (iii) 2024 (iv) 2024	DEFF, Producers through EPR schemes, local government, SALGA, COGTA, Waste Pickers Association, African Reclaimers Association and
	Separate collection of post-consumer waste of products identified for EPR	(i) % of waste collected	(i) Aligned with the targest set in respective Notices	(i) 2021 (ii) 2022 (iii) 2023 (iv) 2024	Producers
	Public online and annually update guidelines, case studies and planning tools on separation at source for municipal managers	(ii) Number of downloads of annual updates (iii) Percentage of households separating at source	(ii) 100 downloads per update (iii) 50% of households in municipalities implementing services	(v) 2021 onwards (vi) 2024	Waste Bureau, Waste RDI Roadmap, COGTA, SALGA and municipalities
	National Awareness campaign on recycling and waste management	Number of Good Green Deeds programme activities implemented on an ongoing basis	20 of Good Green Deeds activities	2020 onwards	DEFF Provinces, municipalities, COGTA and SALGA

Safe and environmentally sustainable disposal of hazardous household wastes	Develop and implement a strategy for the safe disposal of household hazardous waste that includes a communication and awareness plan and EPR as core components	(i) (ii)	Strategy developed and implemented Percentage reduction of hazardous wastes in general landfill sites	(i) (ii)	1 x Strategy adopted and implemented 10% reduction of hazardous waste in general landfills	(i) (ii)	2021 onwards 2024	DEFF, DoH, DTIC, Industry Associations, Producers through EPR shcemes
	Develop and implement a strategy and standards relating to the design and disposal of AHPs such as baby and adult diapers, feminine care products	(i) (ii)	Strategy developed and implemented Percentage reduction in disposal of AHPs to landfill	(i) (ii)	1 x Strategy adopted and implemented 10% reduction of AHPs in landfills	(i)	2021 onwards	DEFF DoH, Private Sector, DTIC SABS
Effective integrated waste management planning	Development and implementation of 5-year provincial and municipal integrated waste management plans	(i) (ii) (iii) (iv) (v) (vi)	Number of provinces to have updated IWMPs Number of municipalities with IWMPs reporting on SAWIS Number of guidelines and reporting standards for provincial and municipal IWMPS, updated Percentage of households receiving waste collection services in compliance with DWCS Percentage of IWMPs reflected in municipal budgets Number of municipal IWMPs submitted to Provinces for approval	(i) (ii) (iii) (iv) (v) (vi)	All (9) updated provincial IWMPs adopted and implemented All municipalities 1 x Guidelines and reporting standards updated 95% of households 80% of IWMPS in municipal budgets All municipal IWMPs submitted to provinces for approval	(i) (ii) (iii) (iv) (v)	2022 2022 2021 2024 2025	Provinces Municipalities DEFF SALGA COGTA
	Improve collection, reporting and dissemination of information on SAWIS	(i)	Percentage improvement of reporting on SAWIS	(i)	60% improvement in reporting	(i) (ii)	2022 2022	DEFF, Provinces, municipalities,

		(ii) Training and compliance to waste information regulations	(ii) 20 Training interventions per annum			SALGA, and COGTA
	Build capacity in integrated waste management planning and provide revised IWMPs guidelines	(i) Number of revised guidelines on IWMPS developed (ii) Number of capacity building programmes implemented per annum	(i) 1 x revised IWMPS guidelines adopted and implemented (ii) 35 of capacity building programme implemented per annum	(i) 2022 (ii) 2025		DEFF Waste Bureau, Waste RDI Roadmap, SALGA, COGTA, Universities with waste management programmes, provinces and municipalities
	Municipalities include provisions for recycling drop-off/buy back/storage centres in their IWMPs, supported by fiscal mechanisms / EPR schemes	(i) Number of new recycling drop-off/buy-back/storage centres established	(i) 20 (number of centres established	(i) 2023		DEFF Waste Bureau, Waste RDI Roadmap, NT, SALGA, Provinces, Municipalities, SALGA, COGTA and Producers through EPR shcemes

PILLAR 3: COMPLIANCE, ENFORCEMENT AND AWARENESS

OUTCOME 3: ***Mainstreaming of waste awareness and a culture of compliance resulting in zero tolerance of pollution, litter and illegal dumping***

KEY ACTION	SUB-ACTIONS	PERFORMANCE INDICATORS	TARGETS	TIMELINE	IMPLEMENTING AGENT/S
Reduce Pollution, littering and illegal dumping	Develop and implement a national awareness campaign about litter and illegal dumping	(i) Rand value of media spend – print, tv, radio (ii) Social Media Campaign statistics	(i) 5 million (ii) 12 per annum	(i) 2024 (ii) 2024	DEFF Provinces, municipalities, COGTA, SALGA and private sector
	Establish a micro-grant facility training and purchasing of equipment for community-based clean-up operations	(i) Number of micro-grants issued with priority focus on women, youth and people living with disabilities (ii) Number of reports from micro-grant recipients	(i) 20 (iii) 20	(i) 2024 (ii) 2024	DEFF Waste Bureau, civil society, Cities Support Programme, NT
Enhance capacity to monitor compliance and enforce the Waste Act and International Agreements	Agreement between DEFF, SAPS and NPA on increasing enforcement of Waste Act and municipal by-laws relating to pollution, littering and illegal dumping	(i) Number of Agreements signed (ii) Number of reports on compliance and enforcement reports	(i) 1 x Agreement signed and implemented (ii) 1 x National Environmental Compliance and Enforcement Report (NECER) per annum	(i) 2021 (ii) 2024	DEFF SAPS, NPA
	Increase the number of EMIs dedicated to monitor compliance and enforce the Waste Act	Number of EMIs appointed	• At least 1 EMI per metro district • All districts • All national, provincial and local municipalities	(i) 2025	DEFF Provinces, local municipalities
	Proclamation on import and export of waste	Number of proclamations developed	1 x proclamation adopted and implemented	2021	DEFF
Ensure municipal landfill sites and waste management facilities comply with licensing requirements	Develop financial mechanisms to enforce compliance to license conditions	(i) Number of policy recommendations on financial mechanisms developed and implemented	(i) 1 x financial mechanism adopted and implemented (ii) 1 x National Action Plan (iii) All municipalities compliant	(i) 2021 (ii) 2021 (iii) 2024	DEFF NT, Provinces, local municipalities

		(ii) Number of national action plan on landfill licensing compliance (iii) Number of municipal landfills complying with licensing conditions			

9 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, academia, research institutionsand civil society.

9.1 NATIONAL GOVERNMENT

The Minister of Forestry and Fisheries and the Environment and her Department has the overall responsibility for ensuring the implementation of the NWMS. To ensure the successful implementation of the strategy, DEFF will issue annual progress reports on its implementation, and these reports may include amendments and/or clarifications to the strategy or its implementation plan. DEFF will use 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 DTIC and the NCPC-SA which have an interest in the socio-economic impact of EPR schemes 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 DTIC, SABS and the NCC on standard setting, labelling and consumer awareness of products;
- The DSI, 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 informed decision-making and policy development, integrated waste management planning by provinces and local government on IWMPs, and to the private sector in terms of EPR schemes. 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 Minerals Resources and Energy (DMRE), which has responsibility for regulation of Waste to Energy projects as they pertain to energy generation. The DEFF and DoE will collaborate on the development and implementation of policy and strategy around promoting waste to energy projects, particularly involving organic waste. The DMRE 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 DALRRD 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 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. DOH also oversees Environmental Health Practitioners, together with the HPCSA, many of whom are also designated EMIs at local authority level;
- The DHSWAS, 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 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 DoT is 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 (DHA) 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 supporting the investigation; and prosecution of the Waste Act and they need to work closely with the compliance monitoring and enforcement arm of the DEFF; and
- Municipalities is responsible for the compliance and enforcement on the Bylaws relation to pollution and waste and they need to work closely with the compliance monitoring and enforcement arm of the DEFF.

In addition to the above, research, development and innovation will be conducted by academia and research institutions; the Department of Planning, Monitoring and Evaluation (DPME) is responsible for government wide monitoring and evaluation of national outcomes in line with the National Development Plan 2030. DEFF will work with DPME to mainstream NWMS 2020 targets and monitor and evaluate on a regular basis.

Further to this, DPME oversee 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 and municipal wastes, that align with the goals of the NWMS, and should be considered part of the implementation plan for the NWMS 2020.

The DEFF through CWE Phakisa are constantly seeking new and improved technologies to meet the objectives of the Department's NWMS. Through engagements with private sector, various government departments, waste specialists as well as tertiary institutions the CWE Phakisa is currently focusing on the following, but not limited to:

- Biological Treatment (Anaerobic Digestion / Fluidised Bed Reactors);
- Material Recovery Facilities and palletisation;
- Composting and re-use of household biomass;
- Waste-to-Energy plants;
- Pyrolysis; and
- Use of ash, sludge and animal matter as a soil ameliorant and input to high agricultural production land.

The above technologies will be implemented through internal sources of funding leveraging from the Green Fund as well as the Infrastructure Fund to the Municipalities that are aligned to the objectives of the programme. Furthermore, CWE Phakisa supports research and innovation such as in the development of roads using plastic and waste to energy projects using biomass, sludge and non-recyclable waste.

The Chemicals and Waste Economy Phakisa collaborates with the GIZ, Norfund and the Swedish Government in specific waste technology focus areas in the different country support programmes.

As part of the process of adopting the NWMS 2020, DEFF will include a budget for implementation of the NWMS that will undertake a study on the costing of the NWMS 2020. NT and the 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 NT is responsible for allocating this revenue to the Waste Bureau for disbursement to stakeholders and projects as per EPR Schemes, when these exists and are applying for such revenue.

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. It also gave effect to the National Pricing Strategy for Waste Management. The Waste Bureau will be responsible for the support of EPR programmes 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 DTIC 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 leverage support from EPR schemes and others to support separation at source and the recovery of recyclable material and safe management of household waste. 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, DEFF will work with National Treasury to include green procurement principles around recycling into the public procurement policy.

9.2 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 2020 NWMS. Primary functions that provincial waste management plans should perform include:

- The DEFF, through SAWIS, will support the provincial government by providing guidelines for the monitoring, reporting and evaluation of IWMPs;
- 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; and
- The provinces, through SAWIS and provincials Waste Information systems, where they are applicable, support the municipalities by providing guidelines for the monitoring, reporting and evaluation of IWMPs.

Provinces also have EMIs that regulate certain aspects of the Waste Act, for example, general waste. The DEFF through SAWIS, will support provincial government by providing guidelines for the monitoring, reporting and evaluation of IWMPs.

9.3 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 NWMS 2020, local government needs to shift the focus of waste collection services to enable and promote diversion of waste from landfills through reuse, recycling and recovery. The DEFF 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:

- All municipalities should include the provision of drop-off/buy back centres and storage facilities for recyclables in their IWMPs. The DEFF (Waste Bureau) will work with partners and stakeholders such as National Treasury, COGTA and SALGA to develop models for the financing of this infrastructure that may leverage EPR Schemes, Industrial Waste Management Plans and/or additional fiscal transfer mechanisms such as conditional grants;
- DEFF 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.

9.4 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 NWMS.

The NWMS 2020 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 DEFF 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 DEFF 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 NWMS 2020. The industry through EPR schemes need to provide for post-consumer waste collection of the products identified for EPR. The industry should enable the financial support of the drop-off/buy back centres and storage facilities for recyclables identified for EPR through the respective EPR schemes.

The DEFF 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; and
- 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.

9.5 INFORMAL SECTOR

Currently an estimated 62,000 people are involved in collection of recyclables on an informal basis as waste pickers (SoWR, 2018). While the majority of waste pickers are not organised, they are forming and joining representative organisations such as South African Waste Pickers Association (SAWPA) and other organisations. The interests of waste pickers are represented by SAWPA, which is allied to a global movement of informal recyclers. Waste pickers collect 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 there 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 NWMS is not intended to exclude the informal sector from waste management and views waste pickers as playing a necessary and important role in the recycling industry. The concerns of government in relation to waste pickers are:

- To minimise health risks to waste pickers including women, youth and persons living with disabilities through raising public awareness around safe domestic disposal of waste ; and
- 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, manufacturing industry, waste recycling industry associations, South African Waste Pickers Association (SAWPA), civil society 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 DEFF 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 EPR programmes can support this process – for instance, waste collectives can be incorporated into municipal collection services to increase recovery rates of recyclables.

9.6 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 regarded 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 and youth organisations are other potential focus for community-based action on waste. These organisations also aim to ensure that initiatives that are aimed at improving waste management services also improve the role of women, youth and people living with disabilities.

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 worker's awareness both in terms of workplace issues around waste, or more general awareness around waste.

10 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.

10.1 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 Centre (SAWIC) serves as a central repository of waste data that is being incrementally developed and implemented.

While in principle the Waste Act requires all licensed waste management activities to be registered on SAWIS and reporting 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, the Waste Act 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.

The DEFF in consultation with the provinces must upgrade the South African Waste Information Centre (SAWIC) 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.

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.

10.2 FINANCING OF WASTE SERVICES

The provision of waste service is a 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 DEFF 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 implementation of the NWMS 2020 will require other sources such as private sector, donor funding and revenue from the EPR fees to complement what the state will be able to provide. This include other economic instruments identified in the DEFF, National Pricing Strategy for Waste Management Charges, 2016.

10.3 COMMUNICATIONS STRATEGY

A communication plan is critical to the successful implementation of the NWMS 2020 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 including women, youth and people living with disabilities. 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 NWMS 2020 will rely on the activities of all stakeholders - not just the DEFF.

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 NWMS 2020:

10.3.1 Publicise the NWMS 2020

This will involve distributing printed A5 booklet versions of the 3rd NWMS and amended the Waste Act 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. DEFF; SAWIS; DTIC; DSI; DoE; DoH; DHSWAS; DALRRD; CSIR; Academia, Civil Society Organisations, Companies, Industry Associations; Provincial and Municipal websites etc. This should be initiated within 6 months of the NWMS being approved by cabinet.

10.3.2 Integrate the NWMS 2020 into local planning

Develop and issue guidelines for municipalities in interpreting, applying, and implementing the National Waste Act and the NWMS 2020 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 cabinet approval of the NWMS.

10.3.3 Integrate the NWMS into the National Waste Awareness Campaign

Integrate the NWMS 2020 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 including women, youth and people living with disabilities and this will be accomplished within 24 months of cabinet approval.

10.3.4 NWMS 2020 Roadshow

This will involve undertaking workshops around the understanding, application and implementation of the NWMS 2020 across South Arica. The DEFF 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 cabinet approval.

APPENDIX 1: Status Quo Assessment

Due to its nature and timing, the 2011 NWMS was focused on giving effect to the legislative imperatives and regulatory measures described in the Waste Act. A central aspect of the project scope of work involved in the revision of the NWMS was the critical evaluation of the extent to which the objectives of the Waste Act have been achieved, and the extent and impact of the regulations and measures accomplished in terms of the Waste Act.

The purpose of the NWMS is to achieve the objects of the Waste Act, which are:

- To reform the law regulating waste management in order to uphold the provision of Section 24 of the Bill of Rights in the Constitution of the Republic of South Africa by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- To provide for institutional arrangements and planning matters;
- To provide for national norms and standards for regulating the management of waste by all spheres of government;
- To provide for specific waste management measures;
- To provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land;
- To provide for the national waste information system; and
- To provide for compliance and enforcement.

To this end, the NWMS contained eight goals which organs of state and affected persons were obliged to give effect to it and which were to have been achieved by 2016. A review of the implementation of the 2011 NWMS in terms of the goals, targets and activities that formed the implementation plan for that strategy was conducted and a dashboard report of progress against goals is tabled below. Progress depicted in the table below has been qualified based on:

- An evaluation of progress towards targets, relying on what quantitative data exists in relation to the relevant indicators wherever possible; and
- An evaluation of progress in implementing the action plan specified for supporting achievement of each goal.

The approach followed has been to give equal weighting to targets and actions for each goal to arrive at a percentage for “progress towards targets and “progress towards implementing actions”. Within these two categories, targets and actions have been weighted equally. While an overall percentage score is arrived at, it should be recognised that the overall process depends on qualitative judgements rather heavily.

Goal	Targets	Actions	Overall
1: Promote waste minimisation, re-use, recycling and recovery of Waste	53%	75%	64%
2: Ensure the effective and efficient delivery of waste services	70%	59%	64%
3: Grow the contribution of the waste sector to the green economy	40%	55%	47%
4: Ensure that people are aware of the impact of waste on their health, well-being and the environment	80%	62%	71%
5: Achieve integrated waste management planning	40%	65%	52%
6: Ensure sound budgeting and financial management for waste Services	10%	55%	32%
7: Provide measures to remediate contaminated land	100%	70%	85%
8: Establish effective compliance with and enforcement of the Waste Act	38%	40%	39%

Table 1 Summary table of progress in implementing the 2011 NWMS

1. Progress in relation to 2011 NWMS Goals and Objectives

Progress in relation to each of the 8 goals is briefly discussed below with respect to the 2016 targets stipulated for each goal.

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

The following three targets were established for this goal:

- 25% of recyclables diverted from landfill sites for re-use, recycling or recovery.
- All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes.
- Achievement of waste reduction and recycling targets set in Industry Waste Management Plans (IndWMPs) for paper and packaging, pesticides, lighting (CFLs) and tyres industries.

Overall progress towards Goal 1: Promoting waste minimisation, re-use, recycling and recovery of waste		64%
Progress towards Targets	53%	
Target	Progress	Comment
25% of recyclables diverted from landfill sites for re-use, recycling or recovery	84%	21% of recyclables diverted during the period.
All metropolitan municipalities, secondary cities and large towns have initiated separation at source programmes	50%	While a large number of pilot programmes and small-scale initiatives have been undertaken, few have been sustainably taken to scale. The

		municipalities and towns that have implemented separation at source are: City of Cape Town, City of Johannesburg, Buffalo City, Ekurhuleni, EThekwini, Stellenbosch, Lephalale, Msunduzi and Drakenstein
Achievement of waste reduction and recycling targets set in IndWMPs for paper and packaging, pesticides, lighting (CFLs) and tyres industries	20%	Targets were not fully achieved due to the delayed approval and implementation of the plans. It should be noted that some voluntary plans have been implemented in some sub-sectors
Progress towards implementing action plan	75%	

Actions not implemented	Partially completed	Completed
	7	3

Table 2: Summary of progress towards Goal 1

1.1.1 Gaps, Challenges and Lessons Learned

In relation to waste minimisation, the 2011 NWMS focuses primarily on recycling as a strategy for diversion of waste from landfill by seeking to create an enabling environment through national norms and standards, the Waste Classification and Management Regulations, sector strategies and IndWMPs. It can be argued that the 2011 NWMS approach to waste minimisation fails to adequately include waste prevention strategies that seek to avoid and reduce the generation of waste, for instance by promoting approaches to the design of products and packaging that reduce waste or encourage reuse, repair and preparation for recycling.

Current waste collection systems are generally not designed to separate recyclables, and therefore there may be significant costs associated with adapting these systems. Consequently, the cost of implementing separation at source programmes are often perceived by local government as a critical challenge. Government intervention may be required to support markets for source separated recyclables and municipalities need to provide an enabling environment for partnerships with the private sector around separation at source.

The success of separation at source programmes also depends on significant behaviour change on the part of consumers and businesses as generators of waste. The Council for Scientific and Industrial Research (CSIR) has been commissioned by a private sector waste company to investigate potential regulatory or economic interventions to increase participation rates in residential separation at source programmes in Johannesburg. Stakeholders have also noted that the 2011 NWMS did not adequately address the role of waste pickers and the informal sector in the recycling economy, and that this needs to be addressed in the revised strategy.

In the absence of subsidies, the economies associated with transporting of recyclables to waste processing facilities are likely to be a limiting factor in more rural areas. With careful planning and cooperation at a provincial, metro and district level, smaller and more remote rural municipalities may be able to accumulate larger volumes of recyclables for transport to centralised facilities.

1.2. Goal 2: Promote waste minimisation, re-use, recycling and recovery of waste

The following two targets were stipulated for this goal by 2016:

- 95% of urban households and 75% of rural households have access to adequate levels of waste collection services.
- 80% of waste disposal sites have permits.

Overall progress towards Goal 2: Ensure the effective and efficient delivery of waste services		64%
Progress towards Targets	70%	
Target	Progress	Comment
95% of urban households and 75% of rural households have access to adequate levels of waste collection services	64.7 %	The challenge is that infrastructure is not sufficient in urban areas and there is a need to change behaviour
	75.1 %	Rural households are currently receiving adequate waste collection services however this target can be improved.
80% of waste disposal sites have permits	100%	90% of landfill sites have permits. This does not include illegal dump sites
Progress towards implementing action plan	59%	
Actions not implemented	Partially implemented	Implemented
3	3	5

Table 3: Summary of progress towards Goal 2

1.2.1 Gaps, Challenges and Lessons Learned

The delivery of waste collection services is uneven and reflects generic underlying challenges facing local government in the country, with almost 50% of the country's 257 municipalities in a state of financial crisis and struggling to deliver services to residents, collect revenue and pay their debts according to the National Treasury (NT). The situation in the larger metros and more urban provinces tends to be somewhat better than in smaller local municipalities and the more rural provinces, however even the most successful metros experience difficulties in delivering adequate levels of service to informal settlements, and in recovering the costs of waste service delivery. Further, the availability of landfill airspace nationally remains tightly constrained.

Although the Waste RDI Roadmap encourages the development of skills within the waste sector and promoting the recruitment of professionals into the sector through supporting post-graduate qualifications in waste management, there remains a critical gap in skills and experience within local government in this sector. In many of the country's districts, not a single waste engineer is employed, and where they are individuals with engineering degrees, they often lack practical experience in the sector.

Non-compliance of municipal-owned landfills with licensing conditions is a thorny problem, imposing fines against municipalities for non-compliance where a principal driver of that failure is lack of resources may not yield the intended results. While in some cases stakeholders have suggested that waste legislation lags behind technology and innovation, in some contexts legislation is clearly in advance of the capacity of local government to comply, and a more flexible, context-sensitive approach is needed. In this respect, it is noted that no budget was attached to NWMS 2011 and

although the DEFF have facilitated access to Municipal Infrastructure Grants (MiG) for waste infrastructure, in future there needs to be greater engagement with NT around the operational expenditures for municipalities associated with implementing the NWMS and Waste Act. In this regard, the importance of undertaking Socio-Economic Impact Assessment Studies (SEIAS) to critique policy measures involving public sector infrastructure are a necessity. SEIAS must also be extended to look into the capacity of the municipalities to comply with the requirements of their Waste Management Licences.

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

The following targets for 2016 were stipulated:

- 69 000 new jobs created in the waste sector
- 600 additional SMEs and cooperatives participating in waste service delivery and recycling

Overall progress towards Goal 3: Grow the contribution of the waste sector to the green economy		47%
Progress towards Targets	40%	
Target	Progress	Comment
69 000 new jobs created in the waste sector	30%	Majority of new "jobs" were in the Extended Public Works Programme (EPWP) programmes and informal sector.
2 600 additional Small, Micro and Medium Enterprise (SMMEs) and cooperatives participating in waste service delivery and recycling	50%	Concerns exist about the sustainability of new cooperatives and SMMEs.
Progress towards implementing action plan	55%	
Actions not implemented	Partially implemented	Implemented
2	2	3

Table 3: Summary of progress towards Goal 3

1.3.1 Gaps, Challenges and Lessons Learned

Stakeholders have raised concerns about the lack of specificity about the types of jobs created in the waste sector in the framing of this target. In terms of formal jobs in the public and private sector, a 2012 waste sector survey undertaken by the Waste RDI Roadmap project of the DSI suggested that almost 30,000 people were employed in the sector. There is no reason to believe that formal employment in the sector had tripled in size by 2016, hence this target has not been achieved by this measure.

However, it is worth noting that there is strong anecdotal evidence of a significant increase in waste pickers during this period, and it is estimated that at least 90% of recyclables diverted from landfill are collected by the informal sector. Such activities constitute livelihoods rather than jobs and are often quite marginal livelihoods that constitute only part of the income of waste pickers. Additionally, large numbers of people have received temporary employment through the Working on Waste Environmental Protection and Infrastructure Programme.

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

The following targets for 2016 were stipulated:

- 80% of municipalities running local awareness campaigns
- 80% of schools implementing waste awareness programmes

Overall progress towards Goal 4: Ensure that people are aware of the impact of waste on their health, well-being and the environment	71%	
Progress towards Targets	80%	
Target	Progress	Comment
80% of municipalities running local awareness campaigns	60%	Awareness campaigns are largely being run in metros and at number of local municipalities. It should be noted that local awareness campaigns do not necessarily result in the reduction of waste generation.
80% of schools implementing waste awareness programmes	100%	Waste awareness has been built into the school curriculum.
Progress towards implementing action plan	62%	

Actions not implemented	Partially implemented	Implemented
1	1	2

Table 5: Progress toward Goal 4

1.4.1 Gaps, Challenges and Lessons Learned

This target assumes that the implementation of awareness campaigns will lead to behaviour change and result in a clean environment. A number of stakeholders suggested that the target needs to be framed in a manner that reflects the desired impact of the awareness campaigns.

Providing a guideline for inclusion in school curricula does not necessarily compel action or result in implementation. Although there is growing private sector support for recycling in schools, the efficacy of school recycling programmes may be dependent on the availability of municipal support or the presence of recycling companies in the area. Awareness should start at early childhood education centres, through primary schools and extend to high school and even tertiary institutions.

The absence of a national awareness campaign aligned with the 2011 NWMS represents a significant lost opportunity, as nationally flighted media is a cost-effective way of supporting local awareness campaigns that would be a powerful enabler for cash strapped municipalities. Furthermore, the ambitious target for Goal 2 in terms of metros, secondary cities and large towns establishing separation at source implies significant levels of behaviour change on the part of households, and this will be difficult to accomplish without a concerted national campaign around separation at source and recycling. Stakeholders noted that campaigns around waste awareness must be tied to the provision of waste services and infrastructure. When people are surrounded by litter in a context in which there is little or no public bins combined with low levels of domestic waste collection, campaigns around litter and illegal dumping will not be credible.

A challenge with locating awareness campaigns within a strategy is the need to measure the effectiveness of such campaigns relative to the resources deployed to ensure that they are cost effective. Furthermore, a national awareness campaign around waste must be responsive to the needs of local government and communities so that messaging is contextually relevant, and should not be implemented in a top-down manner. Awareness campaign should also highlight the dangers of

burning wastes as this is not the most appropriate solution to solve the environmental pollution problem and may lead to health and well-being such as:

- Short-term effects: congenital anomalies, asthma, respiratory infections, stress, anxiety, headache, dizziness, nausea, eye and respiratory irritation.
- Long-term effect: chronic respiratory, cardiovascular diseases, cancer, and brain, nerves, liver, lymph hematopoietic, lung and kidneys diseases.

1.4 Goal 5: Achieve integrated waste management planning

The following targets for 2016 were stipulated:

- All municipalities have integrated their Integrated Waste Management Plan (IWMPs) with their Integrated Development Plan (IDPs) and have met the targets set in IWMPs.
- All waste management facilities required to report to SAWIS have waste quantification systems that report information to SAWIS.

Overall progress towards Goal 5: Achieve integrated waste management planning		52%
Progress towards Targets	40%	
Target	Progress	Comment
All municipalities have integrated their IWMPs with their IDPs, and have met the targets set in IWMPs	40%	Many IWMPs have been developed, but little monitoring and reporting. Prioritisation of waste services in the IDPs must be addressed.

All waste management facilities required to report to SAWIS have waste quantification systems that report information to SAWIS	30%	Based on the current reporting and due to facilities not having waste quantification facilities.
Progress towards implementing action plan	65%	
Actions not implemented	Partially implemented	Implemented
0	7	3

Table 6: Progress towards goal 5

1.4.1 Gaps, Challenges and Lessons Learned

The Waste Act specifies that the NWMS be reviewed every 5 five years and the 2011 NWMS is the first generation to be developed under the Waste Act, yet there are some provincial and local government authorities that have not yet initiated an IWMP process. Other IWMPs are being developed concurrently with, or immediately preceding, the current revision of NWMS and therefore create a challenge of timing in the alignment of local municipal IWMPs with the NWMS.

In practise, many municipalities encounter a lack of capacity to develop IWMPs and rely on consultants, in some cases appointed and funded by the DEFF, to develop these plans. Since consultants may be somewhat removed from the day-to-day functions and constraints of municipalities, this creates a risk of a gap between IWMPs and the operational requirements and capacity of the municipalities concerned. Similarly, the vastly different contexts between metros, secondary cities and small rural local and district municipalities, particularly in relation to resources and the ability to process commercially viable volumes of recyclables, make implementation of the waste management hierarchy difficult in these contexts.

1.5 Goal 6: Ensure sound budgeting and financial management for waste services

The following targets for 2016 were stipulated:

- All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs

Overall progress towards Goal 6: Ensure sound budgeting and financial management for waste services	32%	
Progress towards Targets	10%	
Target	Progress	Comment
All municipalities that provide waste services have conducted full-cost accounting for waste services and have implemented cost reflective tariffs	10%	With the exception of the large metros, few municipalities have implemented full-cost accounting and tariff rarely reflect the actual costs.
Progress towards implementing action plan	55%	

Actions not implemented	Partially implemented	Implemented
2	4	3

Table 7: Progress towards goal 6

1.5.1 Gaps, Challenges and Lessons Learned

In the study referred to above it was also indicated that full cost accounting of services is not taking place, nor has there been the application of the tariff guideline. From the interviews conducted in the four provinces, the tariff model is suited for big cities as small municipalities do not have data. The tariff model has therefore not been tested, which in effect implies that there is a gap in the application of some of the tools developed by the DEFF to test the applicability and capture lessons learnt.

The determination of full cost accounting requires very robust data collection and management systems to inform proper planning. Similarly, the setting of tariffs is informed by a number of factors which includes socio-economic considerations. If consumers are required to pay higher tariffs, they should be able to demand a cleaner environment.

1.6 Goal 7: Provide measures to remediate contaminated land

The following targets for 2016 were stipulated:

- Assessment complete for 80% of sites reported to the contaminated land register
- Remediation plans approved for 50% of confirmed contaminated sites

Overall progress towards Goal 7: Provide measures to remediate contaminated land		85%
Progress towards Targets	100%	
Target	Progress	Comment
Assessment complete for 80% of sites reported to the contaminated land register	100%	This is often accomplished as a single step.
Remediation plans approved for 50% of confirmed contaminated sites	100%	More than 80% of remediation plans approved on time.
Progress towards implementing action plan	70%	
Actions not implemented	Partially implemented	Implemented
0	3	2

Table 4: Progress towards Goal 7

1.6.1 Gaps, Challenges and Lessons Learned

The targets set for goal 7 have been met, largely as a consequence of developing and implementing the framework for the management of contaminated lands, however some gaps remain in relation to the activities specified in the 2011 NWMS. For instance, an important intended outcome of the measures for contaminated lands was to ensure that land could not be sold without the buyer's awareness of the liability associated with contamination of the land and linking the register of contaminated lands with the relevant Deeds registry was to be a mechanism for ensuring this. This

has not been achieved, and there is concern from stakeholders about the manner in which the environmentally conservative definition of contamination might apply to transfers involving land that has already been zoned for uses which imply a level of contamination, particularly where such contamination may pose little direct risk to human health. As a consequence, the implications for the property market of integrating the contaminated lands register with the Deeds register needs careful consideration.

Whilst progress is being made in relation to financial provisions for remediation related to mining, the extension of such mechanisms to other industries warrants consideration. Further, in the context of the polluter pays principle, there has been little progress in establishing a remediation fund or funding mechanisms that would apply to state-owned land where the state is responsible for remediation, or in cases where a private party is responsible, but is delinquent.

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

The following targets for 2016 were stipulated:

- 50% increase in the number of successful enforcement actions against non-compliant activities.
- 800 Environmental Management Inspectors (EMIs) appointed in the three spheres of government to enforce the Waste Act.

Overall progress towards Goal 8: Establish effective compliance with and enforcement of the Waste Act	39%	
Progress towards Targets	38%	
Target	Progress	Comment
50% increase in the number of successful enforcement actions against non-compliant activities.	60%	Criminal prosecutions have decreased and administrative enforcement actions increased.
800 EMIs appointed in the three spheres of government to enforce the Waste Act	19%	Not more than 150 EMIs dedicated to the waste sector
Progress towards implementing action plan	40%	
Actions not implemented	Partially implemented	Implemented
2	2	1

Table 5: Summary table of Progress towards goal 8

1.7.1 Gaps, Challenges and Lessons Learned

The poor performance in relation to compliance of enforcement activities in the waste sector is at least partly a result of punitive actions being viewed negatively at a time when the country is working towards job creation and economic development. There remain many non-complaint waste management facilities operating and environmental waste legislation taking place, such as illegal dumping. This is exacerbated by the enforcement of waste crime being fragmented and responsibilities of enforcement lying with different entities and within different spheres of government. Government, whether it be on a local, provincial or national level, also lacks the human and financial capacity to successfully and efficiently enforce and monitor compliance with the Waste Act. There is a strong need to align roles and responsibilities between authorities and the different spheres of government and have a system of enforcement which should sit at a national level.

Although guidelines and norms and standards have been developed there are still waste management facilities which do not comply with regulations and it is difficult to enforce these due to limited capacity. An example, some of the waste management facilities which do not submit annual audits in

the knowledge that they are non-compliant and fear prosecution. The DEFF does not have enough funding or human capacity to conduct these audits themselves which is required as a form of proof of non-compliance for any legal actions against the waste management facility to take place.

There has been training conducted for EMIs, however most of the EMIs that have been designated specialise in the area of wildlife and biodiversity crime and there have not been sufficient appointments of EMIs into the waste sector. There is also the common challenge of capacity which limits the designation of EMI's into the various levels of government. There is also an issue about officials dedicated to compliance and enforcement activities, as mostly officials responsible for waste licencing are the same officials that are also responsible for compliance and enforcement activities. That is like being a player and a referee.