# RESPONDING TO NEW NATIONAL AND INTERNATIONAL WATER SUPPLY AND SANITATION MONITORING AND EVALUATION OBLIGATIONS

## A FRAMEWORK FOR MOVING FROM THE MILLENIUM DEVELOPMENT GOALS (MGDs) TO SUSTAINABLE DEVELOPMENT GOALS (SDGs)

Report to the
**WATER RESEARCH COMMISSION**

by

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This report forms part of a series of four reports. The other reports are:

- A Framework for Monitoring and Reporting Water Supply Goals and Targets (2016-2030) (WRC Report No. 2588/2/18)
- A Framework for Monitoring and Reporting Sanitation Goals and Targets (2016-2030) (WRC Report No. 2588/3/18)
- A Framework for Monitoring and Reporting Hygiene Goals and Targets (2016-2030) (WRC Report No. 2588/4/18)

# EXECUTIVE SUMMARY

The world has moved into a new era of monitoring and reporting of developmental efforts. After 20 years of focussing on monitoring and reporting developmental interventions through the Millennium Development Goals (MDGs), the globe has shifted to the monitoring of the sustainability of their development imperatives.

The 2030 Agenda for Sustainable Development (2030 Agenda) ratified by world leaders in 2015, including South Africa, resolved to free humanity from poverty, secure a healthy planet for future generations, and build peaceful, inclusive societies as a foundation for ensuring lives of dignity for all. Emanating from the 2030 Agenda were the 17 Sustainable Development Goals (SDGs), 169 new targets to track progress of nations in achieving these development imperatives and 230 global SDG indicators. The SDGs required that countries recognised the integration and balance required of their developmental imperatives to ensure the balance of the three dimensions of sustainable development: the economic, the social and the environment. Implementation of the 2030 Agenda for Sustainable Development has begun, with the first round of reporting of the SDGs already passed. The clock is ticking.

Noteworthy of the SDGs was the formal adoption of **Sustainable Development Goal (SDG) 6** of ensuring *availability and sustainable management of water and sanitation for all*. This water SDG represented a monumental achievement for the water community. SDG 6 contains eight targets: six on outcomes with regard to water and sanitation, and two on the means of implementation of the outcome targets. The Sustainable Development Goal 6 had three water supply, sanitation and hygiene (WASH) targets which would be monitored by three outcome indicators (Figure i).

| | | | |
|---|---|---|---|
| **Goal 6:** Ensure availability and sustainable management of water and sanitation for all | | **Target 6.1 :** By 2030, achieve universal and equitable access to safe and affordable drinking water for all | **Indicator 6.1.1** Proportion of population using safely managed drinking water services |
| | | **Target 6.2:**By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations | Indicator 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water. |
| | | **Target 6.3:** By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally | **Indicator 6.3.1** Proportion of wastewater safely treated |
| **SDG 1**: End poverty in all its forms everywhere | | **Target 1.4.** By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance | **Indicator 1.4.1:**Proportion of population living in households with access to basic services |
| **SDG 4:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all | | **Target 4.a:** Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all. | **Indicator 4.a.1:**Proportion of schools with access to:<br>(e) basic drinking water;<br>**(f)** single-sex basic sanitation facilities; and (g) basic handwashing facilities |

Figure i: Water supply, sanitation and hygiene SDGs, targets and indicators.

Apart from these three important SDG WASH indicators, which South Africa would need to monitor and report between 2016 and 2030, one of the SDG 1 poverty targets and indicators and a SDG 4 target and indicator had direct links to WASH in the country (Figure i). It would be necessary for the WASH sector of the country to also monitor and report progress with these targets and indicator between 2016 and 2030.

Both the international and national SDG 6 monitoring and reporting institution was completed, with the international institution comprising the JMP for Water Supply and Sanitation comprising the WHO and UNICEF (responsible for Indicator 6.1.1 and 6.2.1), the Integrated Monitoring initiative (GEMI) (responsible for Indicator 6.3.2) and UN-Water Global Analysis and Assessment for Sanitation and Drinking-Water (GLAAS). Similarly, there were three key institutions which were responsible for monitoring of water resources and supply in the country at a national level, namely (a) Department of Water and Sanitation which was responsible for monitoring and reporting WASH provision in the country; (2) Department of Performance Monitoring and Evaluation which was responsible for monitoring and reporting progress with the national development agenda such as the National Development Plan; and (3) Statistics South Africa which was responsible for monitoring and reporting South Africa's progress with the SDGs.

It should be noted that the monitoring and reporting of the WASH indicator in Goal 1 and Goal 4 of the SDG were the responsibility of a suite of other international and national institutions. Goal 1 related to poverty remains the responsibility of StatsSA; while Goal 4 on education was the responsibility of the Department of Education and StatsSA.

South Africa had committed to international targets such as the SDGs, while at the same time focussing on developing national water supply, sanitation and hygiene (WASH) policies, legislation, strategies and related sector targets. All these changes in international and national WASH goals and targets and in national WASH and developmental policy, legislation and strategies, impacted on the monitoring and reporting needs and focus of the country. Hence a review of the international and national WASH monitoring and reporting arena and the design of frameworks and tools to report new development in the arena in future was required.

There was thus an urgent need for the water sector of the country to review, align and reform the current water supply and sanitation monitoring and reporting in the country.

Noting this need, the WRC supported this research to conduct *A Review, Alignment and Reform of the National and International Water Supply and Sanitation Monitoring and Reporting Requirements: Alignment of the Water and Sanitation Functions to Respond to New National (NDP; NWRS2) and International (SDG) Obligations.* The research had the purpose of linking water and sanitation sector monitoring and reporting requirements in South Africa to better respond to future national and international needs such as the NDP; Municipal reporting requirements and SDGs. Recommendations would be provided to guide local and national government on how best to align their water monitoring and reporting function to be able to provide a holistic and expedient picture of the status of the sector. A monitoring and reporting framework was to be developed to guide national and local government on the most resource efficient means of monitoring and reporting of the water supply, sanitation and hygiene sector,

while also providing the most effective information to guide future planning, implementation and regulation of the sector.

The aims of the study were to:

1. Review South Africa's future national and international water services monitoring and reporting obligations
2. Develop a Monitoring and Reporting Framework to address South Africa's future national and international water services monitoring and reporting obligations
3. Determine and address the gaps in current water services monitoring and reporting Frameworks to ensure that future WSS monitoring and reporting requirements can be met
4. Develop tools and a guideline to facilitate the implementation of the Water and Sanitation Monitoring and Reporting Framework
5. Test the Water and Sanitation Monitoring and Reporting Framework tools and guideline
6. Develop a training and capacity building guideline to facilitate implementation of the Water and Sanitation Monitoring and Reporting Framework.

The water supply, sanitation and hygiene guidelines which were developed as part of aims 4-6 above could be found in three separate WRC reports, Water Supply Monitoring and Reporting Framework (Report 2588/2/18); Sanitation Monitoring and Reporting Framework (Report 2588/3/18) and Hygiene Monitoring and Reporting Framework (Report 2588/4/18).

A review of South Africa's water supply, sanitation and hygiene services monitoring and reporting capability, namely indicators currently being monitored and reported for the WASH sector of the country, showed that the country was already monitoring and reporting a number of water supply and sanitation indicators. The country, while continuing to monitor and report the indicators for GLAAS; AMCOW and NDP; MTSF; RMPS, Blue Drop; Green Drop; No Drop and policy water supply, sanitation and hygiene indicators and targets, would need to monitor and report the international water supply, sanitation and hygiene SDGs, targets and indicators.

Despite this extensive suite of water supply indicators, it was clear that there were overlaps in indicators, that indicators were repeated by various reporting systems and that indicators were a mix of input, output and outcome indicators. At the same time, many of the current water supply and sanitation indicators in the country were not SMART indicators. Noting that South Africa should be focussed on monitoring and reporting outcomes of interventions to ensure the sustainability of their actions, the indicator review demonstrated that:

1. Outcome indicators were available to monitor and report:
    a. universal access to water supply and sanitation in households, schools, health facilities;
    b. universal access to water supply and sanitation in both rural and urban areas;
    c. the safely managed component of water supply.
2. A large number of input/process/output indicators were available for monitoring and reporting progress with water supply and sanitation in South Africa
3. A large number of structural indicators were available for monitoring and reporting progress with wastewater management – indirect indicator of wastewater

Despite the abundance of water supply and sanitation indicators in the country, there were still significant gaps in targets and indicators related to the outcomes required to ensure

sustainability in the water services sector of the country and there was a significant dearth of hygiene indicators and targets in the country. South Africa would, at this point, only be able to monitor a few components of the water supply, sanitation and hygiene SDG targets.

It was clear from the review of South Africa's current WASH monitoring and reporting systems and processes that the country would only be able to report some component of the WASH indicators shown in Figure i. From a water supply and sanitation perspective the country would be able to report the 'access/using' component of the indicators, namely the proportion of the population using drinking water (Indicator 6.1.1.) or sanitation (Indicator 6.2.1.) services. However, the country would have difficulty reporting the proportion of the population which is using a water supply or sanitation service which is **safely managed** as water quality parameters are needed to determine whether individuals drinking water supply is safe (Indicator 6.1.1.) and wastewater management data is required to determine whether the sanitation service is safely managed (Indicator 6.2.1. and Indicator 6.3.1). From a hygiene perspective, South Africa was currently unable to monitor or report the proportion of the population with access to a handwashing facility with soap and water (Indicator 6.2.1.). The country was however able to report the proportion of the population with access to a basic sanitation and water supply service (Indicator 1.4.1) and the proportion of schools with access to basic drinking water supply and sanitation (Indicator 4.a.1) (although this reporting may require further work to ensure accuracy and consistency with policy).

The indicators for each of the SDG targets shown in Figure i assumed that the indicators was monitoring and reporting that the entire SDG and that by tracking and demonstrating improvement in the indicator, the SDG target would be achieved. However, it is clear that the current international indicators recommended for monitoring and reporting the sustainability of water supply, sanitation and hygiene do not address all the components required of the SDG targets.

A review of the current international indicator against the SDG targets showed that:

1. The current water supply indicator (6.1.1.) only addresses the access, safely managed and drinking water component of the SDG target 6.1. To comprehensively monitor and report progress towards the target, the equity, availability, affordability and additional components of universality (i.e. gender; vulnerable, etc.) would be required, using a further suite of indicators. The SDGs recommend that countries progressively strive to add these country-specific, evidence-based indicators to their monitoring and reporting of the SDGs. The country will also need to domesticate indicator 6.1.1 to be in line with national policy and sustainable development agendas. The country will need to domesticate the manner in which the indicator is reported, i.e. is a basic water supply a borehole or protected source?
2. The current sanitation SDG indicator (6.2.1) only addresses the access (partially), adequacy and sanitation component of the SDG target 6.2. Indicators to expansively monitor and report access (i.e. ease of use and when needed); equity and universality (access for vulnerable; aged; gender) would be required to comprehensively monitor and report the SDG target. The country will also need to domesticate indicator 6.2.1 to be in line with national policy and sustainable development agendas. The country will need to domesticate the manner in which the indicator is reported, i.e. is adequate sanitation a simple pit or only a VIP and higher level of service?

3. The current sanitation SDG indicator (6.2.1) only addressed the adequacy and partially address the access; hygiene and universality requirements of the SDG target 6.2. There was currently no indicator to monitor or report the other hygiene components of sanitation, as well as the equity and universality of access to hygiene. Additional indicator would be required.
4. The current wastewater SDG indicator (6.3.2) only address the proportion; wastewater and untreated component of the SDG target 6.3. There was currently no indicator to monitor and report the safe recycling and reuse component of the target. Additional indicators would be required to comprehensively report this SDG target.

Apart from the gaps in indicators to comprehensively monitor and report all the components of the WASH SDG targets, South Africa thus had gaps in their ability to monitor and report components of the current SDG indicator. Noting these gaps, the research developed a framework to guide the comprehensive monitoring and reporting of the WASH SDG targets in the country. The WASH Framework for South Africa was designed in a hierarchical structure. It was based on the premise that the most effective and efficient hierarchy for monitoring of the sustainability of WASH services in the country in the near future would be the SDG monitoring hierarchy – hence the SDG goals, targets and indicators were not changed in the South Africa WASH Monitoring Framework.

The SDG 6 goals were the top-level goal (intent) of the framework, while the second level of the hierarchy were the targets. Based on the assumption that the SDG targets were the most effective – widely consulted and internationally agreed – the core targets within the South Africa WASH Monitoring Framework were those set for SDG 6. These targets were however complemented by targets set by other interventions, i.e. national targets which related to a SDG 6 were added to the specific goal in the framework.

The third level in the hierarchy was that of the indicators. As noted previously, the SDG 6 WASH indicators were outcome indicators, i.e. indicator 6.1-6.3 were outcome indicators of interventions to provide access to safely managed water supply, sanitation and hygiene in a country. South Africa was monitoring and reporting components of these indicators (using nationally-specific means of measurement) and would continue to do so until 2030. These indicators thus formed the core of the outcome indicators in the South African WASH Monitoring Framework. There were however, a number of other types of indicators, including input indicator and output indicators, which should be utilised to monitor and report progress towards universal and equitable access to water supply, sanitation and hygiene in South Africa. Many of the future monitoring efforts in the country, including Blue Drop, Green Drop, No Drop, National Benchmarking Initiative, NDP and MTSF, National Treasury and policy imperatives, focus on measuring, monitoring and reporting input and output indicators for the WASH sector. These indicators monitor and report the state of the enabling environment which supports the achieving of universal and equitable access to safely managed water supply, sanitation and hygiene services. Hence, these indicators were also included in the South African WASH Monitoring Framework.

Finally, certain gaps were identified in the SDG Monitoring Framework (i.e. financial monitoring; equity monitoring), hence indicators were added to the South African WASH Monitoring Framework. These indicators were however, taken for existing international and regional monitoring efforts including GLAAS, AMCOW, etc.

The research demonstrated a number of WASH monitoring and reporting policy, institution, programme and research gaps and challenges in the country. Recommendations to address these include:

Policy Recommendations

- Develop, engage and reach consensus on domesticated WASH targets;
- Develop, engage and reach consensus on domesticated WASH indicators;
- Develop, engage and reach consensus on a policy to progressively improve WASH monitoring and reporting;
- Set minimum levels of safely managed water supply and sanitation;
- Develop, engage and reach consensus on a WASH equity strategy;
- Develop, engage and reach consensus on mainstreaming of gender dimensions in water and sanitation;
- Integrate and align WASH monitoring and reporting policy and legislation;
- Ensure water security is a focus of WASH policy and monitoring and reporting these efforts.

Institutional Recommendations

- Ensure alignment of the local institution with the international WASH institution;
- Ensure alignment and coordination of the local WASH institution;
- Stakeholder engagement and participation in the SDG process.

Programme Recommendations

- Ensure the enabling environment is in place for the monitoring and reporting of domesticated indicators of WASH and the SDGs;
- Apply frameworks for monitoring and reporting the broader components of water and sanitation hygiene;
- Capture case studies and best practice in implementation of WASH monitoring and reporting.

Research Recommendations

- Research to inform the participatory development and agreed domesticated WASH targets and indicators;
- Research of standardised method to monitor and report domesticated WASH indicators and international SDGs;
- Research of data needs, systems and processes to monitor and report WASH SDG.

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| | |
|---|---|
| AMCOW | African Ministers' Council on Water |
| AWF | African Water Facility |
| BDS | Blue Drop System |
| CMA | Catchment Management Agency |
| CSS | Central Statistical Services |
| DC | District Council |
| DEA | Department of Environmental Affairs |
| DHS | Demographic and Health Surveys |
| DoBE | Department of Basic Education |
| DoH | Department of Health |
| DoW | Department of Women |
| DPLG | Department of Provincial and Local Government |
| DRDLR | Department of Rural Development and Land Reform |
| DU | Dwelling Units |
| DWA | Department of Water Affairs (now DWS) |
| DWAF | Department of Water Affairs and Forestry (now DWS) |
| DWS | Department of Water and Sanitation |
| EEA | European Environment Agency |
| EHP | Environmental Health Project (USAID) |
| EMIS | Education Management Information System |
| ESA | External Support Agencies |
| EU | European Union |
| FFC | Financial and Fiscus Commission |
| GDS | Green Drop System |
| GEMI | Integrated Monitoring initiative |
| GHS | General Household Survey |
| GLAAS | Global Analysis and Assessment of Sanitation and Drinking-Water |
| HRTWS | Human Right to Safe Drinking Water and Sanitation |
| IDP | Integrated Development Plan |
| IMESA | Institution of Municipal Engineering of Southern Africa |
| IRSD | Integrated Rural Development Strategy |
| JMP | Joint Monitoring Programme |
| KPA | Key Performance Area |
| KPI | Key Performance Indicator |
| MBI | Municipal Benchmarking Initiative |
| MDGs | Millennium Development Goals |
| MTSF | Medium-term Strategic Framework |
| NDA | National Development Agency |
| NDP | National Development Plan |
| NDS | No Drop System |
| NRW | Non-Revenue Water PPPs |
| NWRS2 | National Water Resource Strategy2 |
| NWSRS | National Water Service Regulation Strategy |
| OECD-CRS | OECD-Common Reporting Standard |
| OHS | October Household Survey |
| PICC | Presidential Infrastructure Coordinating Commission |
| PSU | Primary Sampling Units |
| RDP | Reconstruction and Development Program |
| RPMS | Regulatory Performance Measurement System |
| RSA | Republic of South Africa |
| SALGA | South African Local Government Agency |
| SDGs | Sustainable Development Goals |

| | |
|---|---|
| SFWS | Strategic Framework for Water Services |
| SIDA | Swedish International Development Cooperation Agency |
| SIP | Strategic Infrastructure Projects |
| SO | Strategic Objective |
| StatsSA | Statistics South Africa |
| TMC | Transitional Metropolitan Council |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environmental Programme |
| UNICEF | United Nations International Children's Education Fund |
| UNICEF/WES | UNICEF Water, Environment and Sanitation (WES) Program |
| UNSD | United Nations Statistical Division |
| USAID | U.S. Agency for International Development |
| WAC | WASH Advocacy Challenge |
| WASH | Water, Sanitation and Hygiene |
| WHO | World Health Organisation |
| WHS | World Health Surveys |
| World Bank/WSP | World Banks Water and Sanitation Program |
| WSA | Water Services Authority |
| WSSCC | Water Supply and Sanitation Collaborative Council |

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# 1 INTRODUCTION AND OBJECTIVES

## 1.1 MOTIVATION FOR THE RESEARCH

In 2016, the world was moving into a new era of monitoring and reporting of developmental efforts. After 20 years of focussing on developmental monitoring and reporting through the Millennium Development Goals (MDGs), the globe had shifted to the monitoring of the sustainability of development imperatives. One of the main outcomes of the Rio+20 Conference (United Nations Conference on Sustainable Development) was the agreement by member states to launch a process to develop a set of Sustainable Development Goals (SDGs). In adopting the 2030 Agenda for Sustainable Development (2030 Agenda) world leaders, including South Africa, resolved to free humanity from poverty, secure a healthy planet for future generations, and build peaceful, inclusive societies as a foundation for ensuring lives of dignity for all (UNEP, 2017). The 2030 Agenda set out the 17 Sustainable Development Goals (SDGs), adopted in 2015, and 169 targets to track progress of nations in achieving these development imperatives (UN, 2015) (Figure 1), The SDGs were integrated and indivisible and balance the three dimensions of sustainable development: the economic, the social and the environment.


Figure 1: International Sustainable Development Goals (https://en.wikipedia.org/wiki/Sustainable_Development_Goals#/media/File:Sustainable_Development_Goals_chart.svg)

The SDGs and targets were envisaged to stimulate action on the critical agenda for humanity and the planet of (UN, 2015):

- **People:** ending poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.
- **Planet:** protecting the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.
- **Prosperity:** ensuring that all human-beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.
- **Peace:** fostering peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
- **Partnership:** mobilizing the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

Implementation the 2030 Agenda for Sustainable Development has begun, with the first round of reporting of the SDGs already passed. The clock is ticking.

Progress in achieving the SDGs were measured by a number global indicators. In March 2016, the Inter-Agency and Expert Group on SDG indicators published a list of 230 global SDG indicators which would track progress towards each of these SDG Targets (UNESCO, 2016). These global indicators were expected to be complemented by indicators at the regional and national levels. UNSD (2016) indicated that these SDG indicators would be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics (General Assembly resolution 68/261). Since many of the SDGs indicators were new or were more expansive than those of the MDGs, a baseline would still need to be established for many of the indicators.

Noteworthy of the SDGs was the formal adoption of **Sustainable Development Goal (SDG) 6** of ensuring availability and sustainable management of water and sanitation for all. This water SDG represented a monumental achievement for the water community (UN-Water, 2015). SDG 6 contains eight targets: six on outcomes with regard to water and sanitation, and two on the means of implementation of the outcome targets (Figure 2). These new targets were significantly more ambitious than the MDGs, in the call for universal access for all and not just merely “halving the backlog” as was the case with the MDGs.


Figure 2: Targets related to SDG 6

South Africa had committed to international targets such as the SDGs, while at the same time focussing on developing national water supply, sanitation and hygiene (WASH) policies, legislation, strategies and related sector targets. All these changes in international and national WASH goals and targets and in national WASH and developmental policy, legislation and strategies, impacted on the monitoring and reporting needs and focus of the country. Hence a review of the international and national WASH monitoring and reporting arena and the design of frameworks and tools to report new developments in the arena in future was required.

This need was further strengthened by the extremely limited resource (financial, human, etc.) from local (Water Service Authorities (WSAs); Catchment Management Agencies (CMAs)) to national government to monitor and report progress, achievements and impacts in the water sector. All levels of government had extremely onerous monitoring and reporting requirements, not only for the water supply and sanitation services they provide, but also to the National Treasury on the financial side of their activities; as well as to all the other sector departments which regulate their activities, i.e. energy; transport; roads; environment, works programmes, etc. This had led to monitoring and reporting fatigue of government.

Within the water sector, WSAs were also required to address monitoring and reporting requirements from Water Services Development Plan, Green, Blue and No Drop Performance Incentive Programmes; to the Non-financial and financial census of municipalities conducted by StatsSA; to the SALGA Benchmarking and Municipal Barometer Initiative, to name a few.

The national Department of Water and Sanitation was required to combine the data provided by WSAs and other sources and report progress, achievements and the state of the water sector, as well as national and international monitoring and reporting obligations. The Department of Performance Monitoring and Evaluation was task with reporting national

indicators, specifically related to the national water supply, sanitation and hygiene imperatives, using data provided by the specialist sector departments.

There was thus an urgent need for the water sector of the country to review, align and reform the current water supply and sanitation monitoring and reporting in the country.

Noting this need, the WRC supported this research to conduct *A Review, Alignment and Reform of the National and International Water Supply and Sanitation Monitoring and Reporting Requirements: Alignment of the Water and Sanitation Functions to Respond to New National (NDP; NWRS2) and International (SDG) Obligations.* The research had the purpose of linking water and sanitation sector monitoring and reporting requirements in South Africa to better respond to future national and international needs such as the NDP; Municipal reporting requirements and SDGs. Recommendations would be provided to guide local and national government on how best to align their water monitoring and reporting function to be able to provide a holistic and expedient picture of the status of the sector. A monitoring and reporting framework was to be developed to guide national and local government on the most resource efficient means of monitoring and reporting of the water supply, sanitation and hygiene sector, while also providing the most effective information to guide future planning, implementation and regulation of the sector.

## 1.2 AIMS OF THE RESEARCH

The aims of the study were thus to:

1. Review South Africa's future national and international water services monitoring and reporting obligations
2. Develop a Monitoring and Reporting Framework to address South Africa's future national and international water services monitoring and reporting obligations
3. Determine and address the gaps in current water services monitoring and reporting Frameworks to ensure that future WSS monitoring and reporting requirements can be met
4. Develop tools and a guideline to facilitate the implementation of the Water and Sanitation Monitoring and Reporting Framework
5. Test the Water and Sanitation Monitoring and Reporting Framework tools and guideline
6. Develop a training and capacity building guideline to facilitate implementation of the Water and Sanitation Monitoring and Reporting Framework

The Guidelines which are developed as part of aims 4-6 focussed on guiding water supply, sanitation and hygiene monitoring and reporting, with a particular focus on what is necessary to monitoring and reporting sustainable water supply, sanitation and hygiene in a country. These guidelines can be found in three separate WRC reports, Water Supply Monitoring and Reporting Guideline (K2588/2); Sanitation Monitoring and Reporting Guideline (K2588/3) and Hygiene Monitoring and Reporting Guideline (K2588/4).

## 1.3 ASSUMPTIONS

As the key focus of national and international monitoring and reporting until 2030, the Sustainable Development Goals, targets and indicators were the chief focus of the review of

future monitoring and reporting requirements in South Africa and form the basis of the Monitoring Frameworks for WASH in South Africa.

The research did recognise however, that South Africa currently had a large amount of water sector monitoring and reporting indicators, systems and frameworks. These current monitoring and reporting indicators, systems and framework were reviewed in the research and were incorporated in the Monitoring Frameworks for WASH in South Africa, where applicable.

## 1.4 STRUCTURE OF THE REPORT

The structure of the report thus includes 3 Section, including:

- **Section 1: Introduction** – this section of the report, providing the background, motivation, aims and assumption for the study.
- **Section 2: History of Monitoring and Reporting of the Water Value Chain in South Africa** – this section provides an overview of monitoring and reporting in South Africa, divided into a review of pre-MDG (pre-1990) and MDG (1990-2015) water and sanitation monitoring and reporting requirements
- **Section 3: New Challenges in the WASH Monitoring and Evaluation Sector** – this section provides an overview of the shift and changes in the WASH Monitoring and Evaluation Sector post-2015.
- **Section 4: Future WASH Monitoring and Reporting requirements for South Africa** – provides an overview of the future reporting requirements for the WASH Sector to report to international, national and local imperatives (2016-2030).
- **Section 5: Gaps in WASH Monitoring and Reporting in South Africa** – this section overlays the current WASH monitoring and report in South Africa with the future (SDG 6) reporting requirements to determine gaps in the country's current reporting frameworks.
- **Section 6: Designing an Effective and Efficient WASH Monitoring and Report Framework for South Africa** – provides an overview of the requirements to ensure an effective and efficient WASH Monitoring and Report Framework for South Africa
- **Section 7: Applying the WASH Monitoring and Reporting Framework** – provides frameworks for monitoring and reporting of water supply, sanitation and hygiene in South Africa
- **Section 8 : Conclusion**
- **Section 9: Recommendations**
- **Section 10: References**
- **Section 11-15: Appendices**

# 2 HISTORY OF MONITORING AND REPORTING OF WATER, SANITATION AND HYGIENE IN SOUTH AFRICA (1990-2015)

This section of the report provided a review of South Africa's historical WASH monitoring and report.

Water, sanitation and hygiene monitoring and reporting had moved through a series of eras, from the Drinking Water Supply and Sanitation Decade (pre-1990), the Millennium Development Goals (MDG) era (2000-2015) and now the Sustainable Development Goals (SDG) era (2015-2030) (Figure 3). South Africa had committed to initiatives and targets set by all these phases of international water and sanitation monitoring and reporting, while at the same time focussing on developing national water, sanitation and hygiene (WASH) policies, legislation, strategies and related sector targets. Consistent across the eras of international and national WASH sector monitoring and reporting was the need for global, regional, and national monitoring programmes that tracked progress in expanding the basic human right to access to safe drinking water and sanitation and that would highlight any gaps and opportunities to accelerate and facilitate progress in addressing these basic human rights (Bartram et al., 2014) (Figure 3).

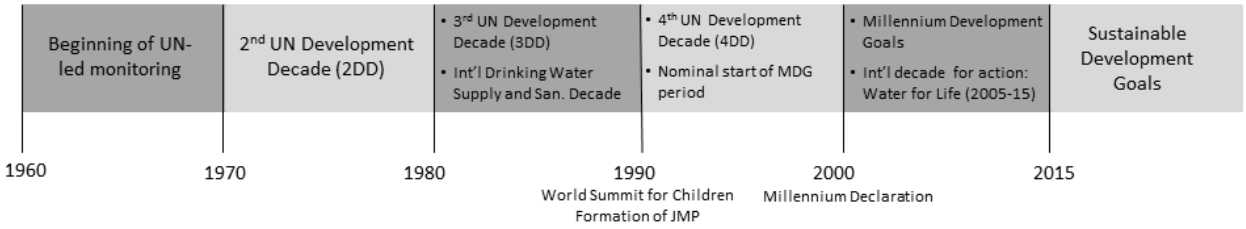


Figure 3: International WASH actions and monitoring activities from 1960 to post-2015 (taken from Bartram et al., 2014)

The global water and sanitation landscape changed dramatically during these periods (1990-2015) of implementation, due to changing policy, national initiatives, major demographic changes and technological shifts (Bartram et al., 2014). The water and sanitation sector monitoring and reporting imperatives and obligations needed to adapted and shift with the change in the water sector landscape, requiring align and reform with each shift in policy/initiative/technology, etc. South Africa's water sector monitoring and report has thus had to shifted, adapted and align through the various eras of WASH.

This section of the report utilises the various eras of monitoring outlined by Bartram et al. (2014) to provide a history of South Africa's (1) pre-1990 water and sanitation reporting efforts, referred to in Section 2.1 as Pre-1990 Reporting Era: Water and Sanitation Decade prior to 1990 and (2) the 1990-2015 water and sanitation reporting efforts, referred to in Section 2.2 as The Millennium Development Goals Era. This Section of the report thus takes the research to the point of current monitoring and reporting, which was the stage of initiating the SDGs and developing baselines for the first round of SDG reporting (2016-2017).

## 2.1 PRE-1990 REPORTING ERA – IMPLEMENTED DURING THE WATER AND SANITATION DECADE PRIOR TO 1990

The international water and sanitation era prior to 1990 (pre-MDGs) had a key focus on addressing the basic human right to water and sanitation by increasing the profile of providing water supply and sanitation to individuals, with a call by the United Nations for countries to (UN, 1990):

a) develop community water supply and sanitation plans and programmes;
b) initiate immediately engineering and feasibility studies on projects of the highest priority;
c) assess manpower situations and establish training programmes;
d) promote campaigns to mobilise public opinion and community participation;
e) establish appropriate institutions with specific responsibilities for the planning, implementation and monitoring of programmes;
f) coordinate efforts to ensure the provision of technically and socially acceptable sanitary facilities; and
g) develop national revolving funds to encourage the mobilisation of resources and equitable participation of beneficiaries, while discouraging wasteful consumption,

However, monitoring of the above imperatives was focussed on reporting bullet (a) related to the number of individuals which gained access to a water supply and sanitation facility.

By the end of the Drinking Water Supply and Sanitation Decade in 1990, the global milestones of an additional 800 million people had gained access to improved water supply and 750 million people to sanitation had been achieved (World Health Organization and United Nations Children's Fund, 2000). However, approximately 1.1 billion people still remained without access to improved sources of water, and approximately 2.4 billion had no access to any form of improved sanitation services (World Health Organization and United Nations Children's Fund, 2000).

South Africa, due to the government system in place prior to 1990, had few statistics on the population's access to water and sanitation services on a national scale. Early documents indicated that there were large disparities in access to water services based on racial groups, urban and rural households and between non-homeland and homeland areas of the country. The individuals advantaged by the apartheid government, largely the white population, had access to a water supply in the households and a flush toilet; with a higher percentage of the urban population enjoying this level of services. Individuals in the homeland states had much lower levels of services (i.e. no water supply, unimproved pit toilets), particularly in the rural areas of these states.

At the end of the International Drinking Water Supply and Sanitation decade (1981-1990), WHO and UNICEF established a Joint Monitoring Programme for Water Supply and Sanitation (JMP). While referred to as a joint programme, the JMP had functioned since its inception through coordination of activities carried out separately by the headquarters of the two organizations (World Health Organisation and UNICEF) (Bartram et al., 2014). The JMP was the official UN program to track and report on the global status of the water supply and sanitation sector, and to support countries in improving their monitoring performance to enable better planning and management at country level. Although the JMP had been producing coverage reports since 1990, it was only in 2000 that the JMP statistics were based mainly on

data from household surveys such as Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) and World Health Surveys (WHS) (WHO website, 2015).

## 2.2 THE MILLENNIUM DEVELOPMENT GOAL ERA – IMPLEMENTED BETWEEN 1990-2015

### 2.2.1 Millennium Development Goals

The Millennium Development Goals (MDG) directed the second period of ensuring universal access to the basic human right to water supply and sanitation. This era was dominated by achieving the MDGs and on the measuring and reporting of progress in achieving the targets set for each of the goals.

Under the influence of the UN Secretariat, at the Millennium Summit held in New-York in September **2000**, 189 UN member-states, including South Africa, adopted the *Millennium Declaration*. A year later, in August **2001**, the UN Secretariat published the 8 *Millennium Development Goals* (MDGs) (Figure 4) (see Appendix 1 for more details of the MDGS). The MDGs, comprising 8 goals, 21 targets and 60 indicators, were the world's time-bound and quantified targets for addressing extreme poverty, including income poverty, hunger, disease, lack of adequate shelter, and exclusion-while promoting gender equality, education, and environmental sustainability (UN, 2008). The MDGs served as a global framework for collective action to reduce poverty and improve the lives of poor people. A key strength of the MDG framework was that it provided a clear and far-reaching agenda that established consistent practices and standards for international development cooperation (UN, 2008).


Figure 4: The International Millennium Development Goals: 1990-2015 (taken from http://www.un.org/millenniumgoals/)

The MDG goals were not the object of a formal resolution of the UN General Assembly, but it was taken for granted that they reformulated the intergovernmental Declaration and were to frame international development cooperation until 2015.

Appendix 1 includes the Revised MDG monitoring framework including targets and indicators. (WHO, 2008).

Of note to the water supply and sanitation sector was MDG Goal 7: To ensure environmental sustainability, which included a water and sanitation target and two indicators, namely:

| Goal 7: Ensure Environmental Sustainability | |
|---|---|
| **Target 7.C**: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation | 7.8 Proportion of population using an **improved** drinking water source<br>7.9 Proportion of population using an **improved** sanitation facility |

At the time of the MDG initiation, there was extensive debate as to the definition and thus how to measure an "improved" drinking water sources and an "improved" sanitation facility. There was a need to agree on a common definition of 'improved' to ensure that all countries where monitoring and reporting in a standardised and consistent manner on MDG Target 7c.

The JMP provided a guide on what the MDG monitoring would and would not be recognised as 'improved" (Table 1). Countries were expected to utilise this list of 'improved' sources to report their progress with Target 7c, namely countries needed to report the proportion of the population using household connections, public standpipes, boreholes, protected wells and springs or rainwater collection as their water supply source or were connect to the public sewer/septic tank; pour flush toilet; Ventilated Improved Pit (VIP) toilet and simple pit toilets as their sanitation system. Table 1 shows the JMP accepted and unaccepted levels of improved water supply and sanitation to report MDG target 7c.

Table 1: Water supply and sanitation technologies considered to be 'improved' and those consider to be 'not improved' (taken from World Health et al., 2000)

| Accepted Improved Water supply | Accepted Improved Sanitation |
|---|---|
| Household connection | Connection to a public sewer |
| Public standpipe | Connection to septic system |
| Borehole | Pour-flush latrine |
| Protected dug well | Ventilated improved pit latrine |
| Protected spring | Simple pit latrine |
| Rainwater collection | |
| **Not Accepted as Improved Water supply** | **Not Accepted as Improved Sanitation** |
| Unprotected well | Service or bucket latrines |
| Unprotected spring | Public latrines |
| Vendor-provided water | Public latrines |
| Bottled water | Open latrine |
| Tanker truck provision of water | |

From **2005**, the UN Secretariat issued a yearly *Millennium Development Goals Report*, demonstrating countries progress in achieving the MDG targets. The Statistics Division of UN DESA coordinated the inter-agency group on MDG indicators, preparing and publishing the annual MDG Report. This report, which utilises 1990 as the baseline year from which to measure progress with the MDG targets, was the most authoritative and comprehensive monitoring report on the MDGs, being based on official data provided by national governments to the international statistical system namely the United Nations Millennium Development Goals web site.

South Africa, as a signatory to the Millennium Declaration, perused the MDG targets of halving the proportion of the population without sustainable access to safe drinking water and basic sanitation by 2015. Appendix 2 shows the data sources and the water supply and sanitation data emanating from the sources which South Africa provided the JMP to track trends in progress towards the water supply and sanitation target of MDG 7. These data sources resulted in an array of results related to the percent/number of households with access to an

improved water supply and sanitation facility (see Appendix 2 for JMP data sources for water supply and sanitation reporting in South Africa during the MDG era).

It was clear from the JMP data that the various surveys which collect data on access to improved water supply and sanitation provided very different data. The following section of this report provided an overview of the progressions of methods and surveys which were utilised to measure access to improved water supplies and sanitation facilities in South Africa between 1990 and 2015 and provided some insight into the potential reason for differences in data outputs from these surveys.

### 2.2.2 Monitoring with the October Households Survey in South Africa: 1993-1999

At the start of this MDG monitoring era in **1990**, South Africa held its first democratically election and initiated the development and promulgation of the water supply and sanitation policy, culminating in the Water Supply and Sanitation Policy White Paper of 1994 (DWAF, 1994). The White Paper indicated that at the time, more than 12 million people did not have access to an adequate supply of potable water; nearly 21 million lack basic sanitation (DWAF, 1994). Government committed to providing universal access to a basic water supply and sanitation to all individuals in the country, recognising the Constitutional right of all individuals to access sufficient water and a healthy environment.

Although a number of national Census's were conducted (i.e. 1981) in South Africa prior to 1990, these Census focussed on capturing basic demographic and economic activities of a household and not on household services. It was only with the initiation of the October Household Surveys in **1993** where the first data on household services were captured. The 1993 OHS had the purpose of a comprehensive household survey to capture household statistics for the total population of the Republic of South Africa (Central Statistical Services (CSS), 1993a). Although 30300 households were included in the survey, the previous TBVC States, i.e. the former homelands, were excluded from the sample (CSS, 1993a; DataFirst, 2014a).

The 1993 OHS questionnaire introduced a section: *Services in dwelling* with the questions (Central Statistical Services, 1993):

**1.3 Main source of domestic water**

| | |
|---|---|
| Running tap water in the dwelling | 1 |
| Running tap water on the site | 2 |
| Tap water from communal tap | 3 |
| Borehole/well | 4 |
| River/dam/spring | 5 |
| Other (specify)…… | 6 |

**1.5 Sanitation**:

| | |
|---|---|
| Flush/chemical toilet in dwelling | 1 |
| Flush/chemical toilet outside dwelling | 2 |
| Latrine with a bucket system | 3 |
| Pit latrine | 4 |
| No facility | 5 |

These questions resulted in the country being able to report for the first time (for the limited sample) the:

1. Number and percent of households with access to each water source
2. Number or percent of households with access to each sanitation type

The result from the survey (shown in Table 2) indicated that, in the sample representative of the non-homeland households in the country, an estimated 65,5% of households had access to a running tap in the house or on site, while a further 18,8% of households had access to a communal tap. The remaining 16,2% of households used other sources of water. From a sanitation perspective, 61% of households had access to a flush toilet, with the remaining households using other or no toilet facilities.

**Table 2: Water services results for the first October Households Survey in the country, showing a) main water sources used by respondents and b) sanitation (source: Central Static Services, October Households Survey, 1993)**

a)

| 1.3 Main source of domestic water | 1993 OHS |
|---|---|
| Running tap water in the dwelling | 50,3% |
| Running tap water on the site | 15,2% |
| Tap water from communal tap | 18,3% |
| Borehole/well | 6,6% |
| River/dam/spring | 9,1% |
| Other (specify) | 0,5% |

b)

| 1.5 Sanitation: | 1993 OHS |
|---|---|
| Flush/chemical toilet in dwelling | 47,7% |
| Flush/chemical toilet outside dwelling | 13,3% |
| Latrine with a bucket system | 5,9% |
| Pit latrine | 24,2% |
| No facility | 8,8% |

The result of the 1993 OHS were however an under-representative of the South Africa population as the homeland households were not sampled. It would be expected that the results for access to flush sanitation and running taps would be lower if these households were included and the percentage of households using the other options of water source and sanitation would be higher.

The OHS of 1994 followed, with the water supply and sanitation section of the survey expanding to include more questions. Unlike the 1993 OHS, the 1994 survey sample included the former TBVC states (Transkei, Bophuthatswana, Venda and Ciskei: the former homelands) and covered the nine provinces which had been established (DataFirst, 2014b). The 1994 OHS was effectively the first, all inclusive, national survey of households in South Africa and thus provides the first indication of water supply and sanitation services and backlogs. The 1991 Population Census however, with all its flaws and limited sample, served as the basis of the sample framework for this survey and 30300 households were included in the sample (DataFirst, 2014b).

Figure 5 shows that the 1994 OHS questionnaire expanded the categories of water sources.

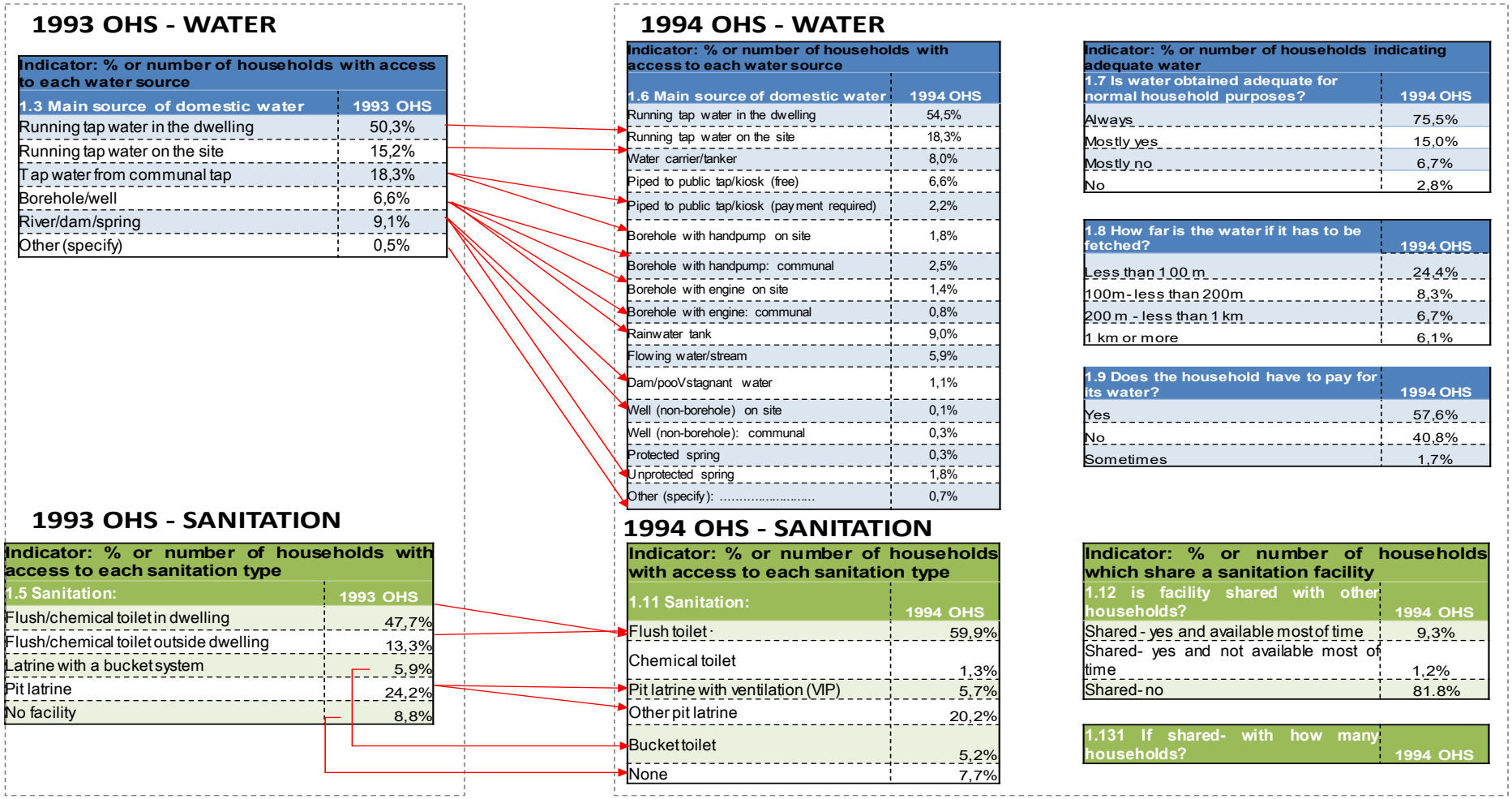


Figure 5: Water services results for the first October Households Survey in the country, showing the water supply and sanitation categories and results for 1993 on the left and the water supply and sanitation questionnaire categories and results for 1994 on the right (source: Central Static Services, October Households Survey, 1993 and 1994)

Due to the adjustments in the 1994 OHS survey questionnaires, the number of indicators which could be reported for water supply and sanitation expanded to:

Water supply

1. Number or percent of households with access to each water source
2. Number or percent of households reporting being able to obtain adequate water for normal household purposes
3. Number or percent of households in each distance to water source category (<100 m; 100 m-<200 m; 200 m-<1 km; >1 km)
4. Number or percent of households paying or not paying for water
5. Number or percent of household with access to each sanitation type

Sanitation

6. Number or percent of households sharing/not sharing a facility
7. Average or range of number of individuals sharing a shared toilet

The addition of these categories in the 1994 survey and the differences in selecting the sample for the survey made the data for the two annual surveys (1993 and 1994) incomparable. The overall conclusions which could be drawn from these two initially OHS was however, that more than a quarter of households did not have access to a tap within the house or yard and that less than 60% of households had access to a flush toilet.

The 1994 OHS was implemented prior to the promulgation of the South African White Paper for Water Supply and Sanitation Policy in November of the same year (South Africa, 1994). The chief purpose of the White Paper was to outline the policy for the new Department of Water Affairs and Forestry (now Department of Water and Sanitation) with specific regard to water supply and sanitation services. Monitoring and evaluation aspects which emanate from the policy were the levels of an acceptable basic service.

The White Paper defined an acceptable basic water supply based on cartage[1]; quantity[2] of water supplied; availability[3]; assurance[4] of supply and water quality[5] provided. Sanitation[6] was defined as a ventilated improved pit toilet or a higher level of services. The levels of an acceptable basic water supply and sanitation in the policy were more stringent than those of the JMP and thus MDGs. South African policy did not accept a borehole, protected well or

---

[1] **Cartage:** The maximum distance which a person should have to cart water to their dwelling is 200 m. In steep terrain this distance may have to be reduced to take account of the extra effort required to cart water up steep slopes.

[2] **Quantity:** 25 litres per person per day. This is considered to be the minimum required for direct consumption, for the preparation of food and for personal hygiene. It is not considered to be adequate for a full, healthy and productive life which is why it is considered as a minimum.

[3] **Availability:** The flow rate of water from the outlet should not be less than 10 litres a minute and the water should be available on a regular, daily basis.

[4] **Assurance of supply**: The supply should provide water security for the community. Two factors are important here. First, schemes for domestic water supply should ensure the availability of "raw" water for 98% of the time. This means that the service should not fail due to drought more than one year in fifty, on average. Second, the operation and maintenance of the system must be effective. The aim should be to have no more than one week's interruption in supply per year.

[5] **Quality:** Once the minimum quantity of water is available, its health-related quality is as important in achieving the goal of a water supply adequate for health. The quality of water provided as a basic service should be in accordance with currently accepted minimum standards with respect to health related chemical and microbial contaminants. It should also be acceptable to consumers in terms of its potability (taste, odour and appearance).

[6] one well-constructed VIP toilet (in various forms, to agreed standards) per household.

spring or rainwater collection as a basic level of water supply and did not accept a basic pit toilets as an acceptable level of sanitation (Table 3).

**Table 3: Accepted and unacceptable categories of basic water supply and sanitation services in the 1994 October Households Survey, when applying the 1994 White Paper on a Water Supply and Sanitation Policy definitions of a basic water supply and sanitation and compared with the MDG definition of improved water supply and sanitation (South Africa, 1994)**

| | MDG Improved Water Supply | 1.6 Main source of domestic water based on White Paper basic level | MDG Improved Sanitation | 7.11 Sanitation: based on White Paper basic level |
|---|---|---|---|---|
| **Acceptable Level of Service** | Household connection | Running tap water in the dwelling | Connection to a public sewer | Flush toilet |
| | | Running tap water on the site | Connection to septic system | |
| | Public standpipe | Piped to public tap/kiosk (free) | Pour-flush latrine | |
| | | Piped to public tap/kiosk (payment required) | Ventilated improved pit latrine | Pit latrine with ventilation (VIP) |
| | Borehole | | Simple pit latrine | |
| | Protected dug well | | | |
| | Protected spring | | | |
| | Rainwater collection | | | |
| **Unacceptable Level of Service** | | Borehole with hand pump on site | Service or bucket latrines | Bucket toilet |
| | | Borehole with hand pump: communal | Public latrines | Other pit latrine |
| | | Borehole with engine on site | Public latrines | |
| | | Borehole with engine: communal | Open latrine | None |
| | Unprotected well | Well (non-borehole) on site | | |
| | | Well (non-borehole): communal | | |
| | Unprotected spring | Unprotected spring | | |
| | | Protected spring | | |
| | | Rainwater tank | | |
| | Vendor-provided water | | | |
| | Bottled water | | | |
| | | Dam/pool/stagnant water | | |
| | Tanker truck provision of water | | | |

The 1994 OHS was followed by a similar survey in **1995**, of 30 000 households, representing all households in the country. A much higher number of enumerator areas (EAs) (3000) were drawn from the survey sample in 1995, as compare to the 1000 EAs in 1994. With the first democratic election in the country in 1994 the demarcation of provinces was finalised, hence the 1995 OHS could stratify the sample by province, urban and non-urban area and race (DataFirst, 2014c). Unfortunately, like the 1993 and 1994 OHS, the 1991 population census had to be used as the sample frame, which had a number of shortcomings including (taken from CSS, 1996):

- *The former 'TBVC states' were excluded in the 1991 census. Consequently, their size had to be estimated when drawing samples of households.*
- *Certain parts of the country, particularly rural areas in the former 'self-governing territories', were not demarcated into clearly defined EAs, and the households in these districts were not listed. Instead, a 'sweep census' was done, covering an entire magisterial district.*
- *In other areas of the country, particularly informal settlements, aerial photography was used to estimate population size, backed by small-scale surveys among households in areas where the photographs were taken.*
- *No allowance was made for new informal settlements, which were springing up all over South Africa, to be incorporated into the sampling frame.*

The 1995 OHS attempted to address these sampling problems. However, when implementing the sampling plan, difficulties were experienced in that fieldworkers became confused regarding the exact boundaries of a particular EA in relation to the above changes and the OHS took place while new EA boundaries were being demarcated, leading to both old (1991) and new (1996) EA boundaries being used in the OHS (DataFirst, 2014c).

With the promulgation of the White Paper on Water Supply and Sanitation Policy in 1994, it could be assumed that the 1995 OHS would adjust the water supply and sanitation survey questions to address the levels of basic services which were accepted by the policy, as well as to capture other requirements of the definition of a basic service such as water quality, assurance of supply and availability. The OHS survey however, as Figure 6 shows, continued to capture the same categories of water sources, only expanding to separate data into main water source for drinking and for other purpose in the households and whether the households had access to a rain-water tank. Only two additional indicators could thus be reported from the 1995 survey, including:

1. Number of households with a rainwater tank
2. Number of households using each main water source type for drinking water

At this point, the OHS could provide a representative sample of households in the country which had access to a water supply that meets some of the requirements of a basic water supply (as outlined in the White Paper), namely:

1. **Cartage:** Number or percent of households with tap in the dwelling; yard or communal tap which is
2. **Cartage:** Within 200 meters of the households (survey question 1.9 and 1.10 would need to be utilised to report this data)
3. **Availability:** Number and percent of households which reported an adequate water supply (this does not imply that the source meets the requirement of 10 litre per minutes as outlined in the White Paper).

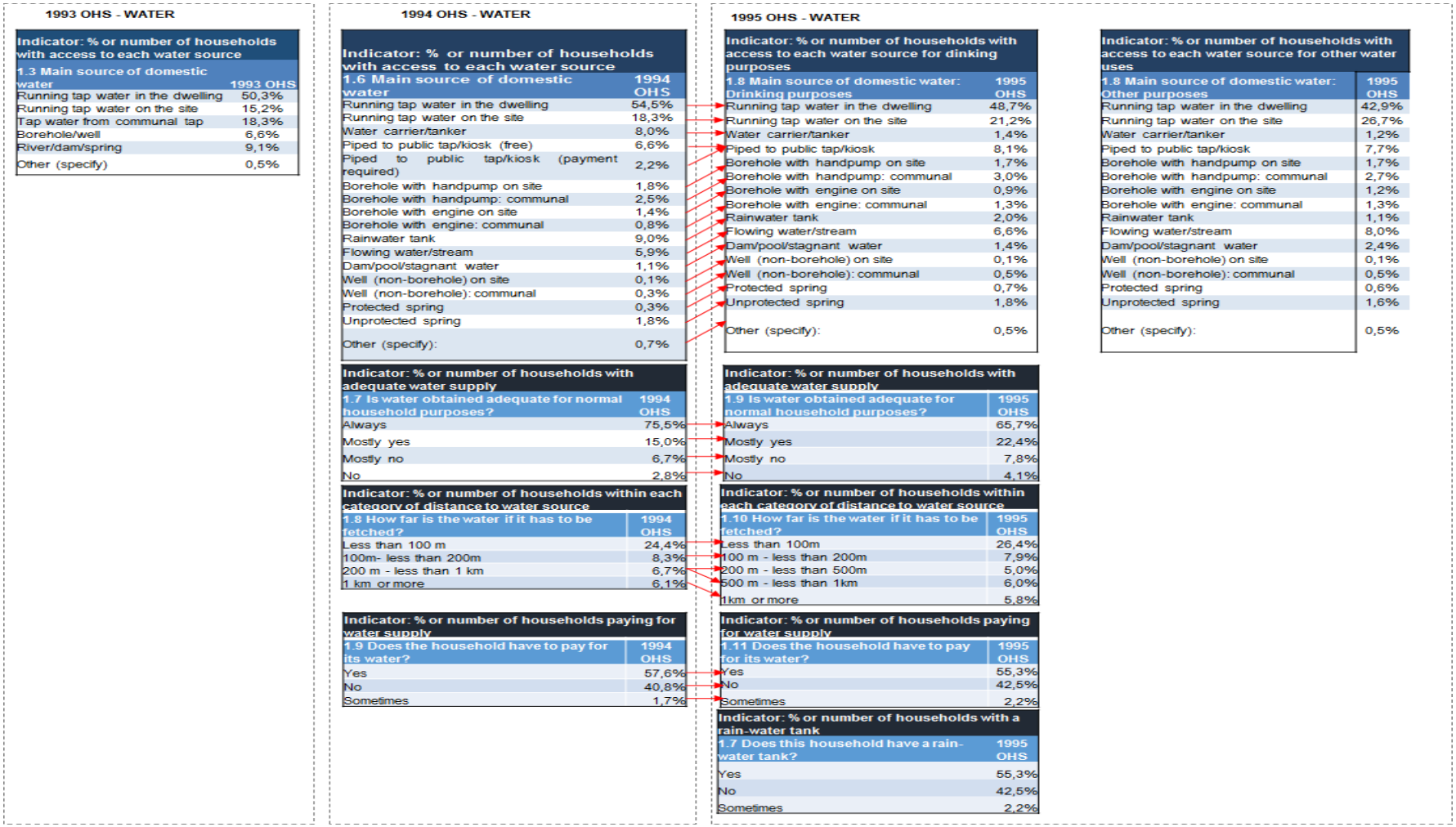


Figure 6: Water supply questions and indicators emanating out of the 1993-2995 October Household Survey

Since different methodologies were used for drawing the samples in 1993, 1994 and 1995 which resulted in varying sampling techniques, the data sets could also not be directly compared. Effectively, each survey was a snapshot of different parts of the country at a specific point in time. There were however broad conclusions which could be drawn from the data sets. For example, access to water and toilet facilities remained problematic in non-urban areas and between race groups in both surveys (CSS, 1996). The 1995 OHS showed that 33% of African households, compared with 72% of coloured, and 97% of both Indian and white households, had running water inside the dwelling for drinking purposes. Even among African household, Figure 7 indicated that in urban areas, 56% of African households had a tap inside the dwelling, while a further 34% had a tap on site. In non-urban areas, however, only 12% of African households had a tap inside the dwelling, and a further 21% had a tap on site (CSS, 1996)

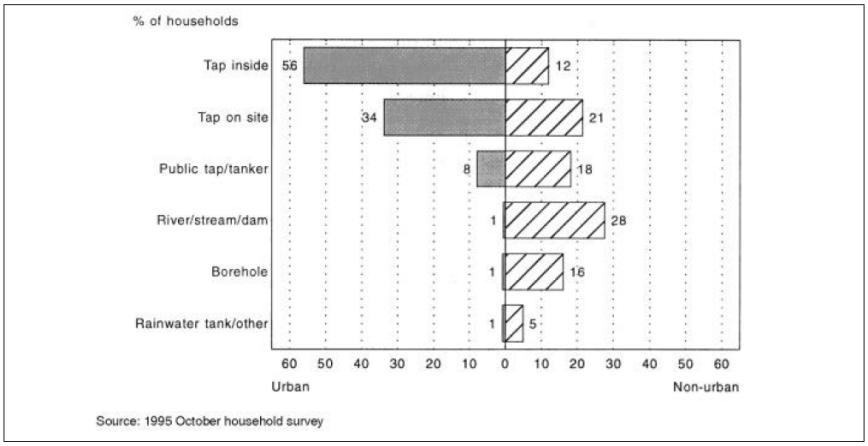


Figure 7: Where water for drinking is obtained in urban and non-urban African households (taken from CSS, 1996)

When the South Africa categories of acceptable levels of service were used to report the 1995 water supply levels in the country and compared with the JMP in 1995 reporting of South Africa's progress with MDG target 7C (Figure 8), the impact of the South African policy's more challenging definition of an acceptable basic water supply was clear, with JMP estimating that the percentage of the population in South Africa which had access to an improved water supply in 1995 being 84%, while using the White Paper definition of an acceptable basic water supply reduced this to 78% of households. This variation in data could perhaps be attributed to the JMP results for 1995 being an estimate, which had been revised for consistence with the 1996 Census data sample (i.e. the 1996 Census was the first all-inclusive census in the country and thus the most accurate dataset for that period). At the same time, the JMP recognized a large set of water supply categories as improved services, when compared to the South African policy categories.

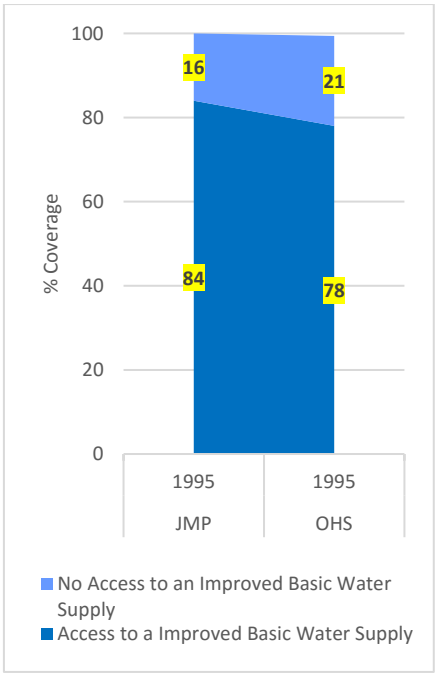


**Figure 8: Percent of the population having access to improved water supply based on the JMP definition of improved water supply and on the White Paper definition of improved water – reported based on the 1995 OHS data.**

The 1995 OHS survey showed a significant expansion of questions and indicator related to sanitation. Where the previous (1994) survey had focussed on the type of toilet in a households and whether and with how many people the toilet was shared, the 1995 OHS increased the questions and indicators to include (Figure 9)

- Number of households in each type category with a toilet in the dwelling
- Number of households with each type category with a toilet on-site
- Number of households with each type category with a toilet off-site

The OHS now separated households into those with a toilet within the dwelling, on-site or off-site and could provide details as to the types of toilets available to households in each of these categories, i.e. flush, VIP, etc. However, it made the assumption that a toilet within a dwelling would be a flush toilet (Figure 9). The survey added a question related to the distance of the toilet (if not in the dwelling). This question related to the policy requirement that access to basic sanitation was that the toilet is available per household. The sector thus interpreted this to assume that the toilet should be on-site to meet basic sanitation policy requirements.

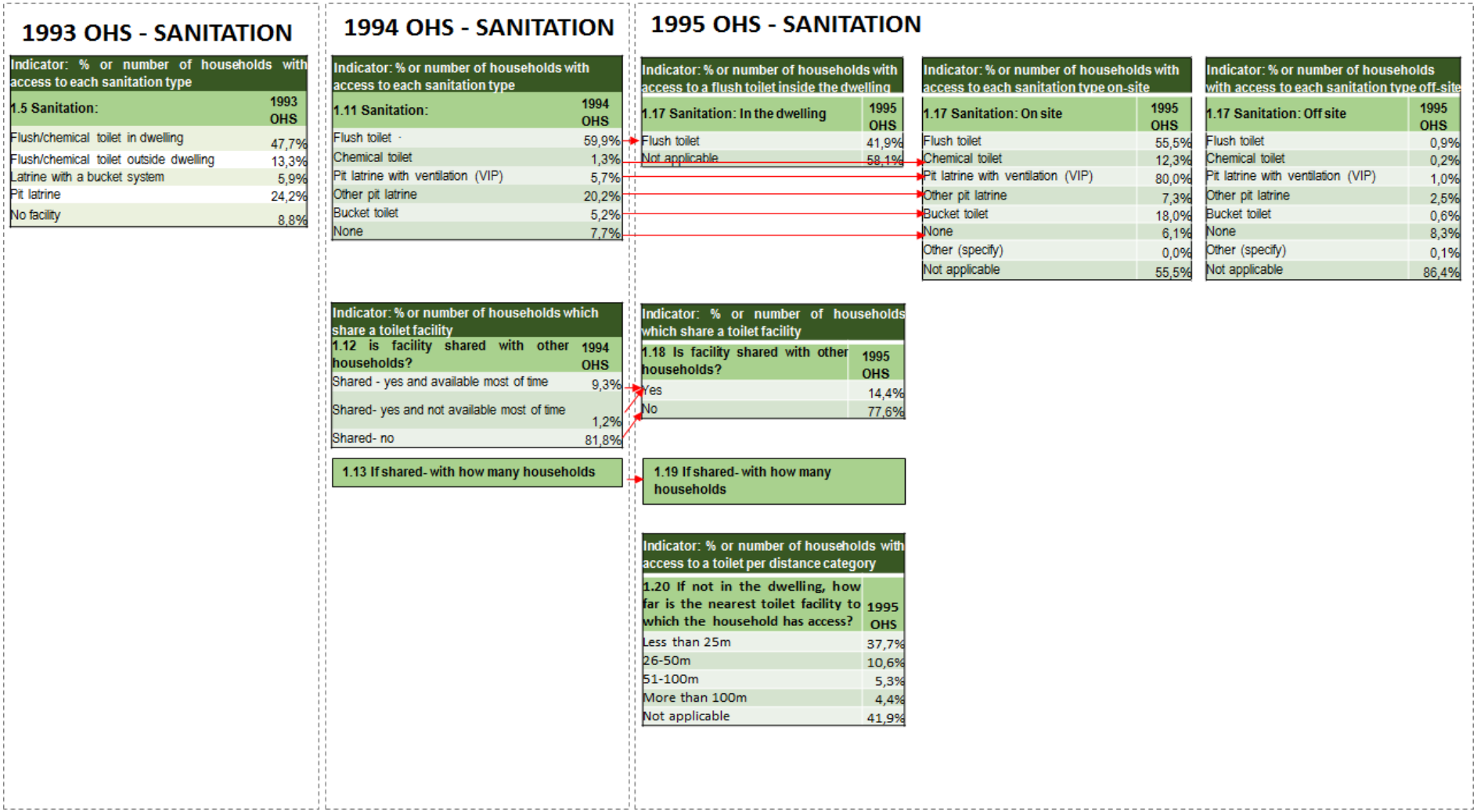


Figure 9: Sanitation questions and indicators from the 1993-1995 OHS (taken from CSS, various years)

Again, like the water supply data of 1993-1995 OHS's, the sanitation data could not be compared over the sampling years. However, broad conclusion showed that the provision of service was inconsistent across urban/rural areas and between races. CSS (1996) showed that flush toilets inside the dwelling were found in almost all white (98%) and Indian (96%) households and in almost two-thirds (64%) of coloured households. However, only 22% of African households had flush toilets inside the dwelling. A further 18% of African households had a flush toilet on site, 35% have a pit latrine, and 6% have a bucket or chemical toilet on site, while 7% had access to toilet facilities off site, and 11% did not have access to any facilities. The urban/rural situation showed even more disparities between the races, with 42% of urban African households having a toilet inside the dwelling, as against 5% of non-urban ones (Figure 10) (CSS, 1996). In non-urban areas, 67% of African households made use of a pit latrine, either on-site or offsite, while in urban areas only 9% of African households make use of this type of facility (CSS, 1996).

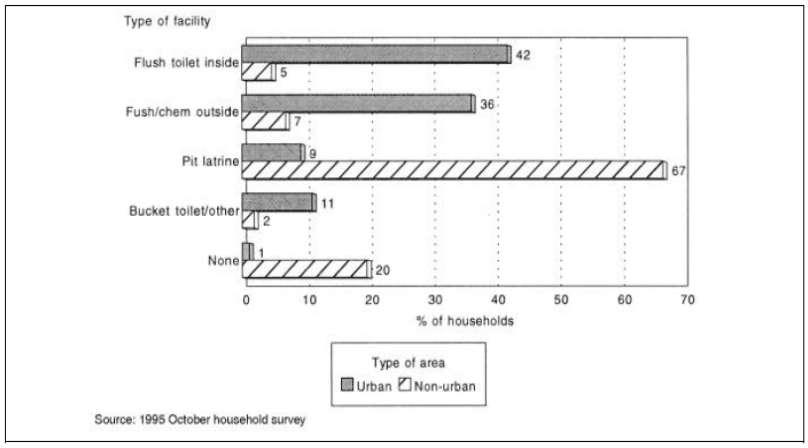


**Figure 10: Type of sanitation facility used among African households in the urban and non-urban areas of the 1995 OHS sample (taken from CSS, 1996)**

Comparing the estimate of progress with the JMPs reporting of the MDGs for South Africa, the White Paper definition of an improved sanitation services showed a higher level (55,1%) of access to improved sanitation as compared to what was reported by the JMP (54%) (Figure 11). This variation in data could again perhaps be attributed to the JMP results for 1995 being an estimate, which had been revised for consistence with the 1996 Census data sample (i.e. the 1996 Census was the first all-inclusive census in the country and thus the most accurate dataset for that period). What was however clear was that access to a basic sanitation service in South Africa provided a significant challenge, with just under half of the population not having access to this critical service. It would require an enduring and ongoing commitment by the country to address this component of MGD Target 7c.

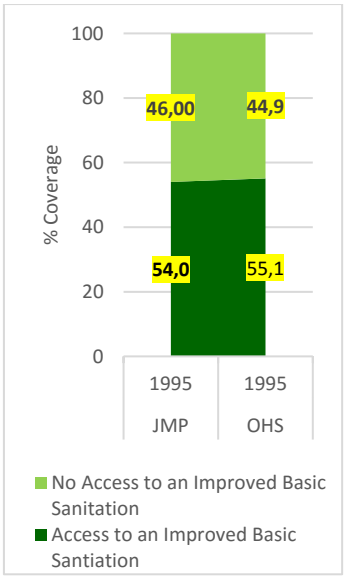


**Figure 11: Estimate of progress with MDGs in 1995 based on JMP categories of improved sanitation and access to improved sanitation using the OHS data to categories sanitation as defined by the White Paper**

South Africa, at this point (1995), still did not have a comprehensive understanding of the water supply and sanitation challenge in the country as all data was still being estimated using previous incomplete Census data. A comprehensive, all-inclusive national Census had not yet been conducted in the country.

### 2.2.3 The 1996 South African National Census

The first all inclusive, national census was conducted in South Africa in **1996**. The 1996 National Census, conducted in October 1996, recorded the details of people living in the more than nine million households in the country, as well as those in hostels, hotels and prisons (CSS, 1996). Census 1996 sought to apply the same methodology to everyone, visiting the household and obtaining details about all its members from a representative who was either interviewed, or else filled in the questionnaire in their language of choice (DataFirst, 2014d).

The census questionnaire and thus indicators which emanated from the survey were the same as those of the 1995 OHS. However, the number of water supply types which were available in the 1996 Census survey questionnaire, for some inexplicable reason, were reduced (see Figure 12). The proportion of households using piped water on-site or in the dwelling in the 1996 Census was reported to be 60,7% and using public taps was 20,8%[7]. This implied that, according to the Census, approximately 81,3% of the population had access to a basic water supply as defined by the 1994 White Paper (StatsSA, 2005). This was a much higher percentage than the 78% reported in the 1995 OHS, showing a 3,3% difference in access to improved water supply between the OHS 1995 data and the 1996 Census.

[7] Note: this figures differ from those shown in Figure 12 as the StatsSA data has been corrected and adjusted based on new developments in enumerated areas.

**1993 OHS - WATER**

| Indicator: % or number of households with access to each water source | |
|---|---|
| 1.3 Main source of domestic water | 1993 OHS |
| Running tap water in the dwelling | 50,3% |
| Running tap water on the site | 15,2% |
| Tap water from communal tap | 18,3% |
| Borehole/well | 6,6% |
| River/dam/spring | 9,1% |
| Other (specify) | 0,5% |

**1994 OHS - WATER**

| Indicator: % or number of households with access to each water source | |
|---|---|
| 1.6 Main source of domestic water | 1994 OHS |
| Running tap water in the dwelling | 54,5% |
| Running tap water on the site | 18,3% |
| Water carrier/tanker | 8,0% |
| Piped to public tap/kiosk (free) | 6,6% |
| Piped to public tap/kiosk (payment required) | 2,2% |
| Borehole with handpump on site | 1,8% |
| Borehole with handpump: communal | 2,5% |
| Borehole with engine on site | 1,4% |
| Borehole with engine: communal | 0,8% |
| Rainwater tank | 9,0% |
| Flowing water/stream | 5,9% |
| Dam/pool/stagnant water | 1,1% |
| Well (non-borehole) on site | 0,1% |
| Well (non-borehole): communal | 0,3% |
| Protected spring | 0,3% |
| Unprotected spring | 1,8% |
| Other (specify): | 0,7% |

| Indicator: % or number of households with adequate water supply | |
|---|---|
| 1.7 Is water obtained adequate for normal household purposes? | 1994 OHS |
| Always | 75,5% |
| Mostly yes | 15,0% |
| Mostly no | 6,7% |
| No | 2,8% |

| Indicator: % or number of households within each category of distance to water source | |
|---|---|
| 1.8 How far is the water if it has to be fetched? | 1994 OHS |
| Less than 100 m | 24,4% |
| 100m- less than 200m | 8,3% |
| 200 m - less than 1 km | 6,7% |
| 1 km or more | 6,1% |

| Indicator: % or number of households paying for water supply | |
|---|---|
| 1.9 Does the household have to pay for its water? | 1994 OHS |
| Yes | 57,6% |
| No | 40,8% |
| Sometimes | 1,7% |

**1995 OHS - WATER**

| Indicator: % or number of households with access to each water source for dinking purposes | |
|---|---|
| 1.8 Main source of domestic water: Drinking purposes | 1995 OHS |
| Running tap water in the dwelling | 48,7% |
| Running tap water on the site | 21,2% |
| Water carrier/tanker | 1,4% |
| Piped to public tap/kiosk | 8,1% |
| Borehole with handpump on site | 1,7% |
| Borehole with handpump: communal | 3,0% |
| Borehole with engine on site | 0,9% |
| Borehole with engine: communal | 1,3% |
| Rainwater tank | 2,0% |
| Flowing water/stream | 6,6% |
| Dam/pool/stagnant water | 1,4% |
| Well (non-borehole) on site | 0,1% |
| Well (non-borehole): communal | 0,5% |
| Protected spring | 0,7% |
| Unprotected spring | 1,8% |
| Other (specify): | 0,5% |

| Indicator: % or number of households with access to each water source for other water uses | |
|---|---|
| 1.8 Main source of domestic water: Other purposes | 1995 OHS |
| Running tap water in the dwelling | 42,9% |
| Running tap water on the site | 26,7% |
| Water carrier/tanker | 1,2% |
| Piped to public tap/kiosk | 7,7% |
| Borehole with handpump on site | 1,7% |
| Borehole with handpump: communal | 2,7% |
| Borehole with engine on site | 1,2% |
| Borehole with engine: communal | 1,3% |
| Rainwater tank | 1,1% |
| Flowing water/stream | 8,0% |
| Dam/pool/stagnant water | 2,4% |
| Well (non-borehole) on site | 0,1% |
| Well (non-borehole): communal | 0,5% |
| Protected spring | 0,6% |
| Unprotected spring | 1,6% |
| Other (specify): | 0,5% |

| Indicator: % or number of households with adequate water supply | |
|---|---|
| 1.9 Is water obtained adequate for normal household purposes? | 1995 OHS |
| Always | 65,7% |
| Mostly yes | 22,4% |
| Mostly no | 7,8% |
| No | 4,1% |

| Indicator: % or number of households within each category of distance to water source | |
|---|---|
| 1.10 How far is the water if it has to be fetched? | 1995 OHS |
| Less than 100m | 26,4% |
| 100 m - less than 200m | 7,9% |
| 200 m - less than 500m | 5,0% |
| 500 m - less than 1km | 6,0% |
| 1km or more | 5,8% |

| Indicator: % or number of households paying for water supply | |
|---|---|
| 1.11 Does the household have to pay for its water? | 1995 OHS |
| Yes | 55,3% |
| No | 42,5% |
| Sometimes | 2,2% |

| Indicator: % or number of households with a rain-water tank | |
|---|---|
| 1.7 Does this household have a rain-water tank? | 1995 OHS |
| Yes | 55,3% |
| No | 42,5% |
| Sometimes | 2,2% |

**1996 CENSUS - WATER**

| Indicator: % or number of households with access to each water source | |
|---|---|
| 2.2 What is this household's main water supply? | 1996 Census |
| Piped water in dwelling | 43,5 |
| Piped water on site | 16,5 |
| Public tap | 19,5 |
| Water-carrier/tanker | 1,2 |
| Borehole/rain-water tank/well | 4,9 |
| Dam/river/stream/spring | 12,6 |
| Other | 1,2 |
| Unspecified/Dummy | 0,6 |

Figure 12: Water supply questions and indicators utilized in the 1993-1995 OHS and the 1996 Census (taken from CSS, various years)

What was clear from the changes and challenges with measuring, monitoring and report of water supply in the country was that the ongoing changes to the sampling systems and the manner in which access was measured was impacting on the reporting outcomes for the country. Using just one measure in Figure 12, which shows access to water supply between 1993 and 1996, the percentage of households with access to running water in the household was reported as 50,3% in 1993, increasing to 54,5% in 1994, decreasing to 48,7% in 1995 and finally decreasing to 43,5% in 1996. Clearly this was not a clear or consistent trend in access of households to running water within the household. The data clearly reflects that the manner in which samples were determined and the manner in which water service access levels were measured had a significant impact on the reporting capability and credibility of the country.

With the 1996 Census providing, for the first time, water supply and sanitation data and information for the entire South Africa, the JMP recognised this data as representative of the population and thus valid for utilising in reporting progress with the MDGs. South Africa's baseline year for the MDG is thus 1996, with the 1990-1995 data for the country being an extrapolation from the 1996 dataset. Figure 13 below shows that the JMP estimated that in 1990 and 1995, 86% of the urban population and 24-25% of rural households had access to a water supply on the premises (in the dwelling or yard). A further 12% of urban and 42% of rural households had access to other improved water sources (communal taps). Based on these estimate, 98% of urban households and 66-67% of rural households had access to a basic water supply in 1990 and 1995. As a country, 83% of the population had access to improved water supply in 1990, increasing to 84% in 1995.

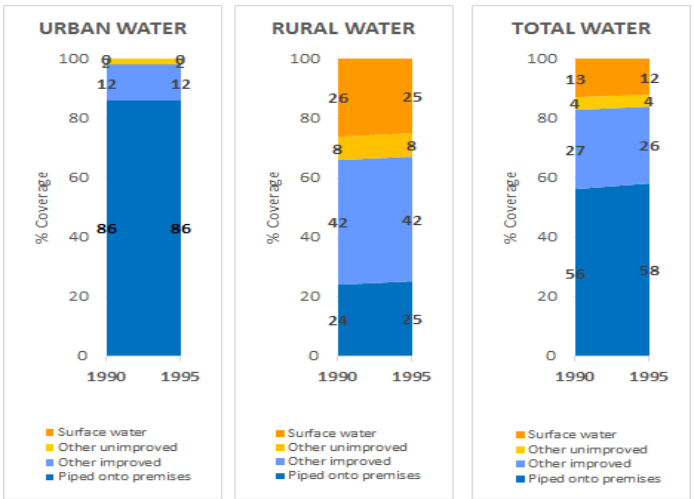


**Figure 13: JMP estimates of access to water supply in South Africa in 1990 and 1995 (adapted from UNICEF and World Health Organization, 2015)**

The 1996 Census also minimised the sanitation types categories, as compared to the categories in the October Households Survey's (1993-1995) (Figure 14). This was unfortunate as the 1994 White Paper category of a VIP which was utilised in the 1995 OHS was removed from the 1996 Census questionnaire (Figure 14). The census questionnaire also combined the option of having 'other' type of sanitation with having no facility; thus, effectively increasing the number of households which would be reported as having no sanitation. The other indicators reported from the Census remained consistent with those of the 1995 OHS.

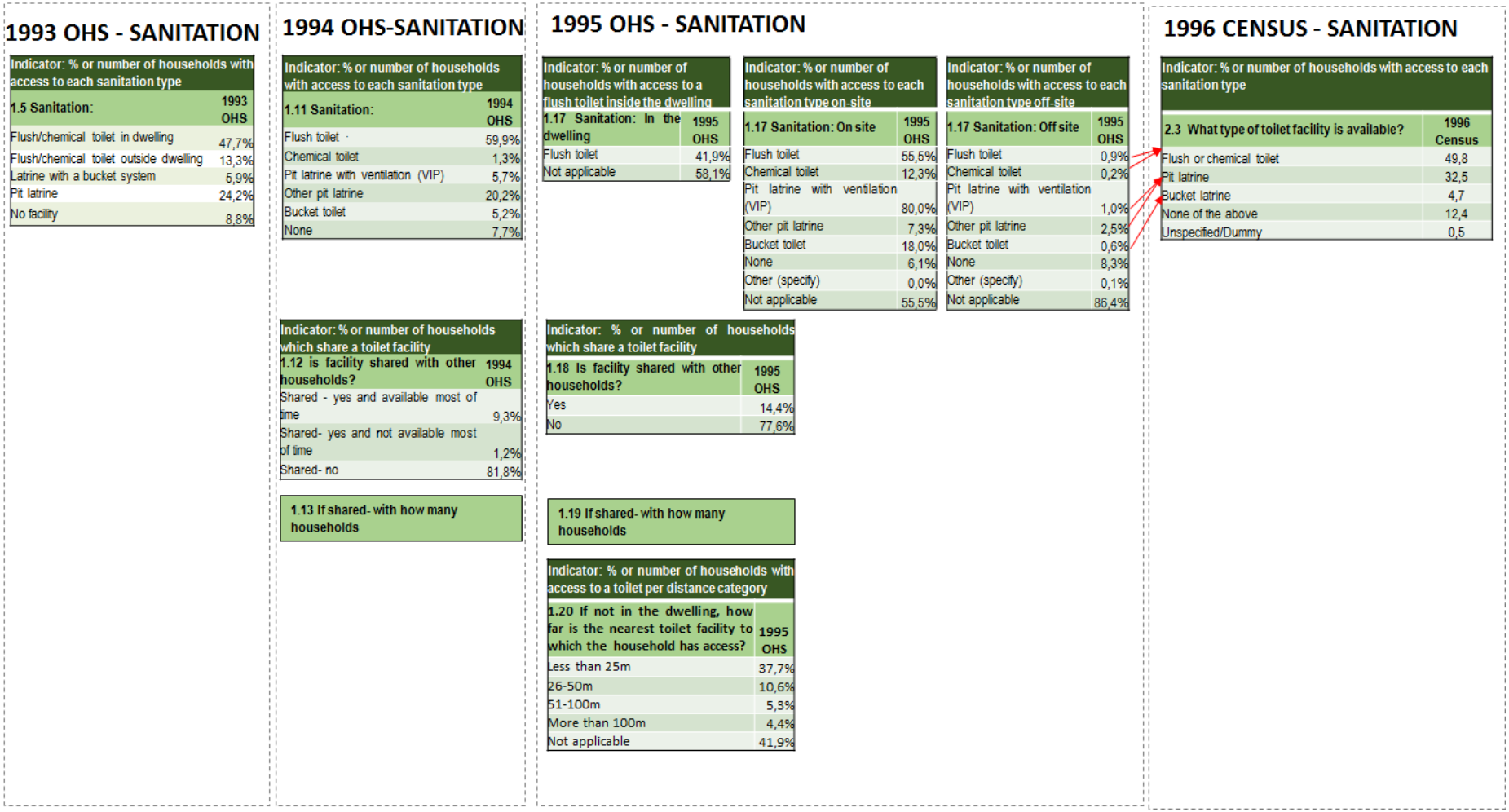


Figure 14: Sanitation questions and indicators which can be reported from the 1993-1995 OHS and 1996 Census (taken from CSS, various years)

The 1996 Census data indicated that approximately 50,6% of households had access to a flush or chemical toilets, while 32,4% of households used an unimproved pit latrines. Similar to the water supply reporting from these surveys and Census, the nature of the sample selection and the manner in which sanitation was measured by the survey, resulted in data which did not show a clear trend in increasing access to improved sanitation. In fact, just using a single measure such as having access to a flush toilet, the data shows 47,7% of households had access to a flush/chemical toilet in the 1993 survey, increasing to 59,9% in the 1994 survey, decreasing to 55,9% in 1995 and finally assessed as 49,8% of households in the 1996 Census.

From the perspective of sanitation, the JMP did not utilise the 1996 Census results to estimate access to improved sanitation for 1990 and 1995, but rather used the 1994-1995 OHS data. Using this data, the JMP in Figure 15 estimated that access to improved (flush, VIP, Compost toilet, Other Improved) sanitation had increased from 64% in 1990 to 65% in 1995 in urban households, while access to improved sanitation in rural households had increased from 10% in 1990 to 11% in 1995 (Figure 15). In total, just over 50% of the population had improved sanitation in 1990, increasing to 54% of households in 1995.

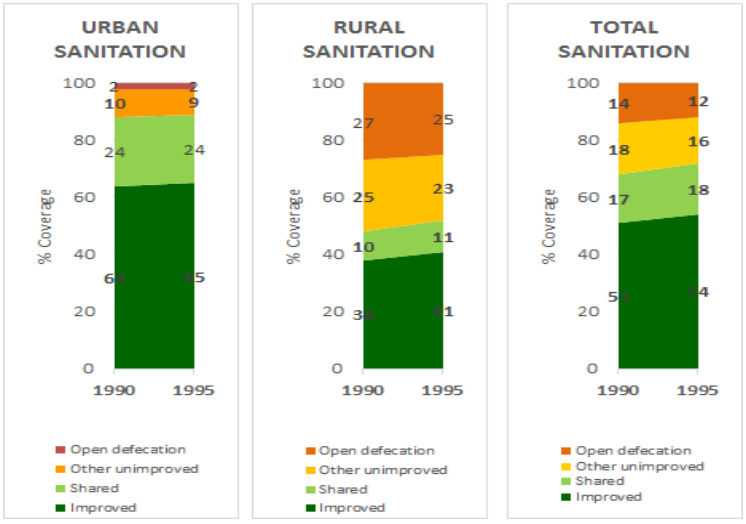


Figure 15: JMP estimates of access to sanitation in South Africa in 1990 and 1995 (adapted from UN Water and Who, 2015)

### 2.2.4 Monitoring with the October Household Survey: 1997-1999

The October Household Survey conducted post the 1996 Census utilize the Census data for sample selection. The samples were based on the 1996 Population Census enumerator areas and the estimated number of people from the administrative records of the Census. The data was explicitly stratified by province, Transitional Metropolitan Councils (TMC) and District Councils (DC) (DataFirst, 2015). Hence, the sample was more accurate and representative in these surveys.

StatsSA conducted the October Household Survey (OHS) annually from 1997 to 1999, based on a probability sample of a large number of households, approximately 30 000 households each year (depending on availability of funding) (StatsSA, 2004).

The **1997** OHS; **1998** OHS; **1999** OHS followed that same questions and thus indicators as the 1995 OHS. The 1997 OHS and 1998 OHS surveys did however add an additional question related to water supply, namely how much a households was paying for water, if they were paying for the water supply (Table 4). The 1997 OHS sanitation type categories reverted back to those of the 1995 OHS – separating 'pit latrines' into a category for 'VIPs' and another category for 'other pits toilets'.

Table 4: Additional question from the 1997 OHS (StatsSA, 1997).

9.16 **If the household has to pay for its water** [Ask],
How much does the household pay?

| | |
|---|---|
| Less than R50 | 1 |
| R50 or more | 2 |
| Do not know | 3 |

Based on the 1997-1999 OHS survey questions, the country was able to report a suite of indicators for water supply and sanitation (Table 5).

Table 5: Indicators, from the OHS, of water supply and sanitation services in South Africa in 1997-1999.

| Water supply Indicators | Sanitation Indicator |
|---|---|
| Number or percent of households per main water source type = percent of households with improved (basic) water supply (in dwelling; yard; communal tap) | Number or percent of households per sanitation type = percent of households with improved (basic) sanitation (flush; VIP) |
| Number or percent of households with water source further than 200 m from the households (not basic water supply) | Number or percent of households sharing the toilet |
| Number or percent of households paying for water supply | Number or percent of households (with the toilet outside the dwelling) per distance category (<25 m; 25 m-<50 m, etc.) |
| Number or percent of households per payment category for water supply (less R50; more R50) | Number or percent of households, with bucket toilet, which reported each frequency of emptying category (once a week or more often; about once a fortnight, etc.) |

Unfortunately, the OHS were discontinued in 1999 due to the reprioritisation of surveys in the face of financial constraints (StatsSA, 2004). There was thus a data gap in reporting access to water supply and sanitation for the year 2000.

### 2.2.5 The 2001 South African National Census

The year **2001** saw the second national census being conducted in South Africa. The 2001 Census had the purpose to record the details of the people who were present in the country on the night of 9-10 October 2001. People living in households across the country, as well as those in hostels, hotels, hospitals and all other types of communal living quarters, and even the homeless, were visited (StatsSA, 2001).

The 2001 Census included only 3 questions for water supply and sanitation, namely *where the household obtained piped water for domestic use*; *the main water source for domestic use*

and the *type of sanitation facility available to the households*. The questionnaire thus provides data for the indicators:

- Number of percent of households with:
    - no access to pipes water;
    - access to a communal tap further than 200 m away;
    - a communal tap within 200 m of the households;
    - pipes water in the dwelling or yard

  = percent of households with access to a basic water supply service (in dwelling; yard tap; communal tap within 200 m of household)

- Number or percent of households per main water source category
- Number or percent of households with access to each sanitation facility type

  = percent of households with access to a basic level of service (flush; VIP)

The results of Census 2001 indicated that access to piped water inside the dwelling had declined between the 1996 and 2001 Census, from 45% to 32% (Figure 16). However, the number of households with access to piped water in the yard had increased from 17% to 29%. Over the same period access to a water source within 200 m of the household had increased from 20% to 23%. Hence, the percentage of households with access to a basic improved water supply service (source within 200 metres of the household) had increase from 82% in 1996 to 84% in the 2001 Census.

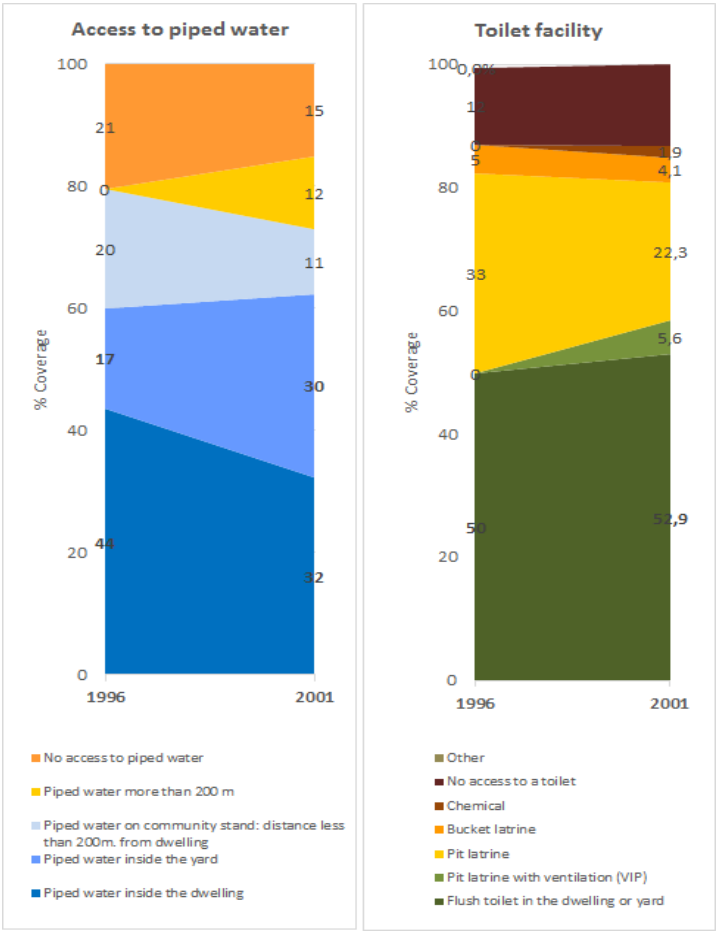


**Figure 16: Percentage of households with access to each piped water type and sanitation type in the 1996 and 2001 Census (source: StatsSA, 1996; 2001)**

Figure 16 also showed that between the 1996 and 2001 Census, the percentage of households with access to improved sanitation (as per the White Paper definition) had increased from 50% to 58,5%. This implied that in 2001, 58,5% of households had access to a basic improved sanitation service. However, it should be noted that access to a 'chemical toilet' was included in the 'flush toilet' category in the 1996 Census and thus the figure of 50% of households having access to improved sanitation would have been an over-estimate. At the same time, since the 1996 Census did not separate the pit toilet category into a VIP toilet (an acceptable basic sanitation facility) and other pits, the data for this category in Figure 16 could also be an over-estimate and may thus obscure households which have access to a basic level of sanitation service.

The difficulties with a number of the national surveys and Census which had been conducted in South Africa was that any change the questions or categorisation of answer options in the questionnaire affects the comparability of data across surveys. Hence, it is difficult to compare the 1996 and 2001 Census result for water supply and sanitation services in the country. Hence, even in 2001 South Africa's reporting of access to basic water supply and sanitation services in pursuit of the MDG Target 7c could not show any trends or credible changes.

### 2.2.6 Monitoring with the General Household Survey and other Initiatives: 2002-2011

At this time (2001), a need was identified for a regular survey designed specifically to measure the level of development and the performance of government programmes and projects. Hence, StatsSA introduced in July **2002** the General Household Survey (GHS), to replace the OHS. The GHS had the purpose to measure indicators of the basket of services provided in the 13 nodal areas identified for the Integrated Rural Development Strategy (IRSD). The ISRDS was designed to address the national vision of attaining *socially cohesive and stable communities with viable institutions, sustainable economies and universal access to social amenities, able to attract skilled and knowledgeable people, equipped to contribute to their own and the nation's growth and development* by 2010 (South Africa, 2000).

The General Household Survey's between 2002 and 2015 used a multi-stage stratified sample, drawn using probability proportional to size principles (DataFirst, 2015). The primary sample unit usually included 3000 units, with ten dwelling units within each primary sampling unit (DataFirst, 2015). Hence, the GHS included sampling approximately 30 000 dwelling units (including units in hostels).

Figure 17, which showed the water supply questions and categories of answers in the GHS of **2002**, demonstrated that the GHS collected data to be able to report seven water supply indicators in the country, namely:

1. Number or percent of households with access to each water source type = percent of households which have or do not have access to a basic water supply
2. Number of percent of households which have to walk each time category to collect water
3. Number or percent of households reporting good/poor water aesthetics
4. Number or percent of households spending more than 1 hour a week collecting water
5. Number or percent of households which experience water supply interruptions per interval category
6. Number or percent of households reporting each category of reason for water interruption

7. Number or percent of households reporting each category of time taken to fix the water supply problem

The 2002 GHS shifted the water supply data collection and reporting from a focus on just reporting access to infrastructure to include acceptability, ease of use and sustainability of the service provided.

**2002 GHS - WATER**

| Indicator: % or number of households with access to each water source | |
|---|---|
| 4.8 What is the household's main source of water? | Percent of Individuals |
| PIPED (TAP) WATER IN DWELLING | 37,5% |
| PIPED (TAP) WATER ON SITE OR IN YARD | 26,2% |
| NEIGHBOUR'S TAP | 2,3% |
| BOREHOLE ON SITE | 1,3% |
| RAIN-WATER TANK ON SITE | 0,5% |
| PUBLIC TAP | 14,8% |
| WATER-CARRIER/TANKER | 0,6% |
| BOREHOLE OFF SITE/COMMUNAL | 3,3% |
| FLOWING WATER/STREAM/RIVER | 7,6% |
| DAM/POOL/STAGNANT WATER | 1,2% |
| WELL | 1,8% |
| SPRING | 2,4% |
| OTHER, specify | 0,2% |

| Indicator: % or number of households witout access to a yard/dwelling tap which travel each time category to collect water | |
|---|---|
| Ask if water is not in dwelling, yard or site: 4.9: How long does it take members of this household to get to the water source? | Percent of Individuals |
| 0 - 14 MIN | 13,2% |
| 15 - 29 MIN | 9,2% |
| 30 - 44 MIN | 4,7% |
| 45 - 59 MIN | 1,7% |
| 60 MIN OR MORE | 2,6% |
| NOT APPLICABLE | 67,8% |
| UNSPECIFIED | 0,9% |

| Indicator: % or number of households reporting good/poor water aesthetics | | |
|---|---|---|
| 4.10: The water from the main source | Percent of Individuals agree | Percent of individuals that disagree |
| Is it safe to drink? | 87,6% | 12,0% |
| Is it clear? | 88,9% | 10,6% |
| Does it taste good? | 87,7% | 11,8% |
| Is it free from odours? | 87% | 12,2% |

| Indicator: % or number of households which spent at least an hour fetching water for home use | |
|---|---|
| 1.6.a In the last seven days, did youspend at least one hour fetching water for home use (not for sale) | |
| YES | 14,2% |
| NO | 85,7% |
| UNSPECIFIED | 0,1% |

| Indicator: % or number of households reporting each water supply interruption interval (if access to a tap in dwelling/yard/neighbour/communal | |
|---|---|
| 4.11 How often do you get interruptions in your piped water supply (if the households reported having a tap in the dwelling, yard, at the neighbours or communal tap) | Percent of Individuals |
| DAILY | 2,6% |
| WEEKLY | 6,4% |
| MONTHLY | 9,2% |
| 6 MONTHLY | 8,7% |
| YEARLY | 3,6% |
| ALMOST NEVER | 49,6% |
| NOT APPLICABLE | 19,1% |
| UNSPECIFIED | 0,9% |

| Indicator: % or number of households reporting each reason for water supply interruption (if access to a tap in dwelling/yard/neighbour/communal | |
|---|---|
| 4.12 What normally causes the interruption? | Percent of Individuals |
| BURST PIPES | 11,1% |
| PUMP NOT WORKING | 2,7% |
| GENERAL MAINTENANCE | 8,9% |
| NOT ENOUGH WATER IN THE SYSTEM (DEMAND TOO HIGH) | 3,8% |
| WATER ONLY DELIVERED AT FIXED TIMES | 0,4% |
| NON-PAYMENT FOR SERVICES | 0,9% |
| VANDALISM | 0,3% |
| OTHER, specify | 0,3% |
| DON'T KNOW | 1,8% |
| NOT APPLICABLE | 68,7% |
| UNSPECIFIED | 1,1% |

| Indicator: % or number of households reporting each time period to rectify the problem (if access to a tap in dwelling/yard/neighbour/communal) | |
|---|---|
| 4.13 The last time it happened, when was the problem to rectify? | Percent of Individuals |
| SAME DAY | 12,8% |
| DURING THE SAME WEEK | 11,0% |
| DURING THE SAME MONTH | 4,0% |
| LONGER THAN MONTH, specify | 0,9% |
| NOT APPLICABLE | 70,0% |
| UNSPECIFIED | 1,3% |

**Figure 17: Questions and indicator emanating from the GHS 2002 (taken from StatsSA, 2002)**

Figure 18 showed that the 2002 GHS included three sanitation questions. These questions allowed the country to report on the indicators of:

- Percent or number of households with access to improved sanitation and access to each category of sanitation;
- Percent or number of household per distance to toilet category = toilet on-site or within dwelling is deemed to be improved; and
- Percent or number of households using a bucket toilet per emptying category

The 2002 GHS questionnaire paid special attention to capturing the frequency of bucket toilet emptying, as the country was embarking on a programme to eradicate the use of the bucket toilets.

| Indicator: % or number of households with access to each sanitation type in the dwelling; on-site and off-site | Percent of Individuals |
|---|---|
| **4.17: What type of toilet facility is available to this household: in dwelling; on-sit and off-site** | |
| FLUSH TOILET CONNECTED TO A PUBLIC SEWAGE SYSTEM | 49% |
| FLUSH TOILET CONNECTED TO A SEPTIC TANK | 2% |
| CHEMICAL TOILET | 0% |
| PIT LATRINE WITH VENTILATION PIPE | 5% |
| PIT LATRINE WITHOUT VENTILATION PIPE | 30% |
| BUCKET TOILET | 3% |
| NONE | 11% |

| Indicator: % or number of households with access to a toilet within each distance category | Percent of Individuals |
|---|---|
| **4.18: If the toilet is on-site or off-site - How far is the nearest toilet facility to which the household has access** | |
| LESS THAN 2 MINUTES (LESS THAN 200M) | 46,6% |
| 2 MINUTES BUT LESS THAN 5 MINUTES (200M - 500M) | 5,8% |
| MORE THAN 5 MINUTES (MORE THAN 500M) | 0,2% |
| NOT APPLICABLE | 45,3% |
| UNSPECIFIED | 2,1% |

| Indicator: % or number of households with access to a bucket toilet per emptying frequency | Percent of Individuals |
|---|---|
| 4.19: If the households has a bucket toilet - How frequently is it removed? | |
| ONCE A WEEK OR MORE OFTEN | 2,1% |
| ABOUT ONCE A FORTNIGHT | 0,2% |
| ABOUT ONCE A MONTH | 0,1% |
| LESS OFTEN THAN ONCE A MONTH | 0,0% |
| NOT APPLICABLE | 97,3% |
| UNSPECIFIED | 0,2% |

Figure 18: Sanitation questions included in the 2002 GHS

During this MDG implementation era, South Africa set the more challenging aspirational water supply and sanitation targets in the Strategic Framework for Water Services (SFWS) in **2003**. The SFWS provided a 10-year strategic plan for the water supply and sanitation sector of the country, setting the targets of (DWAF, 2003):

1. All people in South Africa have access to a functioning basic water supply facility by 2008.
2. All people in South Africa have access to a functioning basic sanitation facility by 2010.
3. All schools have adequate and safe water supply and sanitation services by 2005.
4. All clinics have adequate and safe water supply and sanitation services by 2007.
5. Hygiene education and the wise use of water are taught in all schools by 2005.
6. 70% of households with access to at least a basic sanitation facility know how to practise safe sanitation by 2005 (and 100% by 2010).

An important outcome of the SFWS was to ensure implementation of water supply and sanitation provision in a holistic manner, covering not only the meeting of the MDGs targets but also the more challenging South African water supply target of access to a household tap; on-site/yard tap or community tap (within 200 m) and the sanitation target of household's access to, at least, VIP toilet.

A second important output of the SFWS was the refinement of the definition of a basic water supply and sanitation, as compared to the definitions provided in the White Paper on Water Supply and Sanitation of 1994 (Table 6 and Table 7). The SFWS distinguished a definition for a water supply and sanitation *facility* (the infrastructure), the *sustainable operation* of the facility and the *communication* of good health, hygiene and water-related practices. For the basic water supply definition, the SFWS added more detail related to continuous flow of water and water quality (Table 6). With all these definitional changes, the manner in which access to a basic water supply and sanitation were monitored and reported would have needed to be reviewed and updated.

Table 6: Basic water supply definition as outlined in the 1994 White Paper policy and the 2003 SFWS (DWAF, 1994; DWAF, 2003)

| Criteria | | South African Policy (1994) | SFWS |
|---|---|---|---|
| **Availability:** | Sufficient | • 25 litres per person per day – striving for higher quantities where feasible and<br>• the flow rate of water from the outlet of not be less than 10 litres a minute and<br>• water should be available on a regular, daily basis | • 25 litres of potable water per person per day<br>• minimum flow of 10 litres per minute (in the case of communal water points) or<br>• 6 000 litres of potable water supplied per formal connection per month (in the case of yard or house connections) |
| | Continuous | • available for at least 350 days per year and<br>• not interrupted for more than 48 consecutive hours per incident<br>• availability of "raw" water for 98% of the time – service should not fail due to drought more than one year in fifty, on average<br>• operation and maintenance of the system must be effective. The aim should be to have no more than one week's interruption in supply per year. | • the sustainable operation of the facility (available for at least 350 days per year and<br>• not interrupted for more than 48 consecutive hours per incident) |
| **Accessibility:** | Physical | • not currently included in the definition | • not currently included in the definition |
| | Proximity | • within 200 metres of a household | • within 200 metres of a household |
| **Quality** | | • the quality of water provided as a basic service should be in accordance with currently accepted minimum standards with respect to health related chemical and microbial contaminants. It should also be acceptable to consumers in terms of its potability (taste, odour and appearance) | • potable water |
| **Affordability** | | • everyone has the right to a basic amount of water that is affordable | • not included in the definition |
| **Acceptability** | | • should be acceptable to consumers in terms of its potability (taste, odour and appearance). | • taste, odour and appearance not included in the definition |
| **Communication** | | • the communication of good water-use, hygiene and related practices. | • communication of good water-use, hygiene and related practices. |

The SFWS, for the first time, provided a comprehensive definition of a basic sanitation service and a basic sanitation facility, although the 1994 White Paper specification that a Ventilated Improved Pit (VIP) toilet per household was the minimum level of an accepted basic sanitation facility still applied. The new definition of sanitation, shown in Table 7, included the safe disposal of wastewater (as appropriate and necessary). These definitions in the SFWS did not change the levels of a water supply or sanitation facility which was deemed to be 'improved' in the South Africa context (see Table 3 above).

Table 7: Definition component for basic sanitation taken from the South African policies and the SFWS (DWAF, 1994; DWAF, 2001 and DWAF, 2003)

| Criteria | | South African Policy | SFWS |
|---|---|---|---|
| **Availability:** | Infrastructure | Well-constructed VIP | A facility which is:<br>• safe,<br>• private,<br>• protected from the weather and ventilated, k<br>• keeps smells to the minimum |
| | Operation | Not included | A facility which is:<br>• reliable<br>• is operating sustainable |
| **Accessibility:** | Physical | Not included | • The provision of a basic sanitation facility which was easily accessible to a household, |
| | Proximity | Per Household | Not included |
| **Quality** | | Not included | A facility that is:<br>• is easy to keep clean<br>• enables safe and appropriate treatment and/or removal of human waste and wastewater in an environmentally sound manner |
| **Risk** | | Not included | A sanitation facility which:<br>• minimises the risk of the spread of sanitation-related diseases by facilitating the appropriate control of disease carrying flies and pests<br>• the safe removal of human waste and wastewater from the premises where this is appropriate and necessary |
| **Affordability** | | Not included | Not included |
| **Acceptability** | | Not included | Not included |
| **Communication** | | Not included | • communication of good sanitation, hygiene and related practices |

Noting these governmental definitional imperatives, the annual GHS between 2002 and 2010 captured key information on water supply and sanitation to report progress in addressing the SFWS targets. These GHSs made small adjustments or additions in indicators and the survey questions to capture this data (see Appendix 3 for these shifts in survey questions).

From a water quality perspective initial efforts in drinking water quality management in South Africa focused on the monitoring of the quality of resource from which drinking water was extracted (DWS, 2014). As a result, South Africa had a National Chemical Monitoring Programme; National Eutrophication Monitoring Programme and National Toxicity Monitoring Programme, to monitor water quality variable, P and N compounds, chlorophyll, algae, cyanobacteria and toxicant levels in the countries water resources (Table 8) (DWS, 2014). There was however, no monitoring programme for the quality of the water which was provided by water supply systems or for the compliance of discharge from wastewater treatment works (DWS, 2014).

Table 8: National monitoring programmes (DWAF, 2004)

| | Monitoring Programme | Indicators/Measures | Type of Report | Frequency of Reporting |
|---|---|---|---|---|
| 1 | National Microbial Monitoring Programme (NMMP) | microbes (*E. coli*, Faecal coliform) | Microbial Status Report | • Bi-monthly<br>• Annually |
| 3 | National Chemical Monitoring Programme (NCMP) | Numerous water quality variables | Assessment and Planning Reports | Variable |
| 4 | National Eutrophication Monitoring Programme (NEMP) | P and N compounds, Chlorophyll, Algae, Cyanobacteria | Eutrophication Status Reports | Annually |
| 6 | National Toxicity Monitoring Programme (NTMP) | Toxicants and toxicity | Toxicological Water Quality Status Report | Regularly |
| 7 | Ecological Reserve Determination and Monitoring | | Ecological Status Report | Intermittent |
| 8 | Hydrographic Surveys for sedimentation | | Reservoir Volume and Sedimentation | Every 20 years per dam |
| 9 | Dam walls (dam safety) | | Coordinates and diagrams | Bi-annually |
| 10 | Hydrological Monitoring Programme (HMP) | • Continuous surface water levels at gauging stations, canals, and dams and flow rates in pipelines<br>• Rainfall and evaporation | • Flow and Dam Records,<br>• Total Flow Regime,<br>• Evaporation and rainfall records | • Continuous,<br>• daily,<br>• monthly,<br>• annually |
| 11 | Geohydrological Monitoring Programme (GMP) | • Rainfall depth and chemical character,<br>• EC and temperature,<br>• Groundwater level,<br>• Isotope,<br>• Trace elements | • Groundwater balance,<br>Geochemical trends and spatial changes,<br>• Geohydrological Reports | • Hourly readings of groundwater levels,<br>• Bi-annual sampling of quality. |

With the introduction of formal regulation in South Africa (**2004**), a survey was conducted amongst municipalities to determine the extent of drinking water quality monitoring (DWS, 2014a). The study showed that more than 50% of the Water Services Authorities did not monitor the quality of tap water provided to their respective constituencies (DWA, 2014). As part of this regulatory responsibility, the Department of Water and Sanitation thus initiated (amongst others) the Blue Drop (BD) Certification Programme on 11 September **2008** with the objective to (DWS, 2014). :

- Introduce incentive-based regulation of drinking water quality management;
- Promote transparency and subsequent accountability;
- Provide reliable and consistent information to the public;
- Facilitate closer relationships between Water Services Authorities and Water Services Providers (where applicable).
- Introducing an element of excellence instead of conventional regulation.

The BD performance system addressed the legislative requirement that water services institutions have suitable monitoring programmes in place (DWS, 2014). It was mandatory for water services institutions to participate in the BD process and it remained illegal for Water Services Authorities and Water Services Providers to refuse, withhold or provide false information as specified in Section 82 of the Water Services Act (No. 108 of 1997). The introduction of the certification programme thus ensured that the South African water services sector adopted the required preventative approach towards the management and regulation of drinking water.

The BD performance systems made use of a hierarchical structure to determine the drinking water quality performance of a water services institution (Figure 19), including BD Targets ((Scores); Key Performance Areas (KPAs) and Key Performance Indicators (KPIs) and one or more measures per indicator (referred to as sub-requirements). The systems focussed on

assessment of performance of WSAs based on their water safety planning, water treatment process management and control, water quality verification and compliance, local regulation and management accountability responsibilities, their asset management and their levels of water use efficiencies and water loss management. Within each of the criteria were a number of performance indicators which assessed progress of the WSA to address the relevant criteria. Indicators were largely focussed on monitoring inputs/outputs such as management structures, capacity and systems were in place, process and procedures of operation of treatment works and systems and processes for management of assets. Only criteria 3 focussed on monitoring outcome indicators, i.e. water quality treatment compliance.

Blue Drop Assessments are usually conducted every two years with a Blue Drop Assessment Reported published indicated a score for each WSA and water system in the assessment. A Blue Drop progress report is also produced in the alternative years.

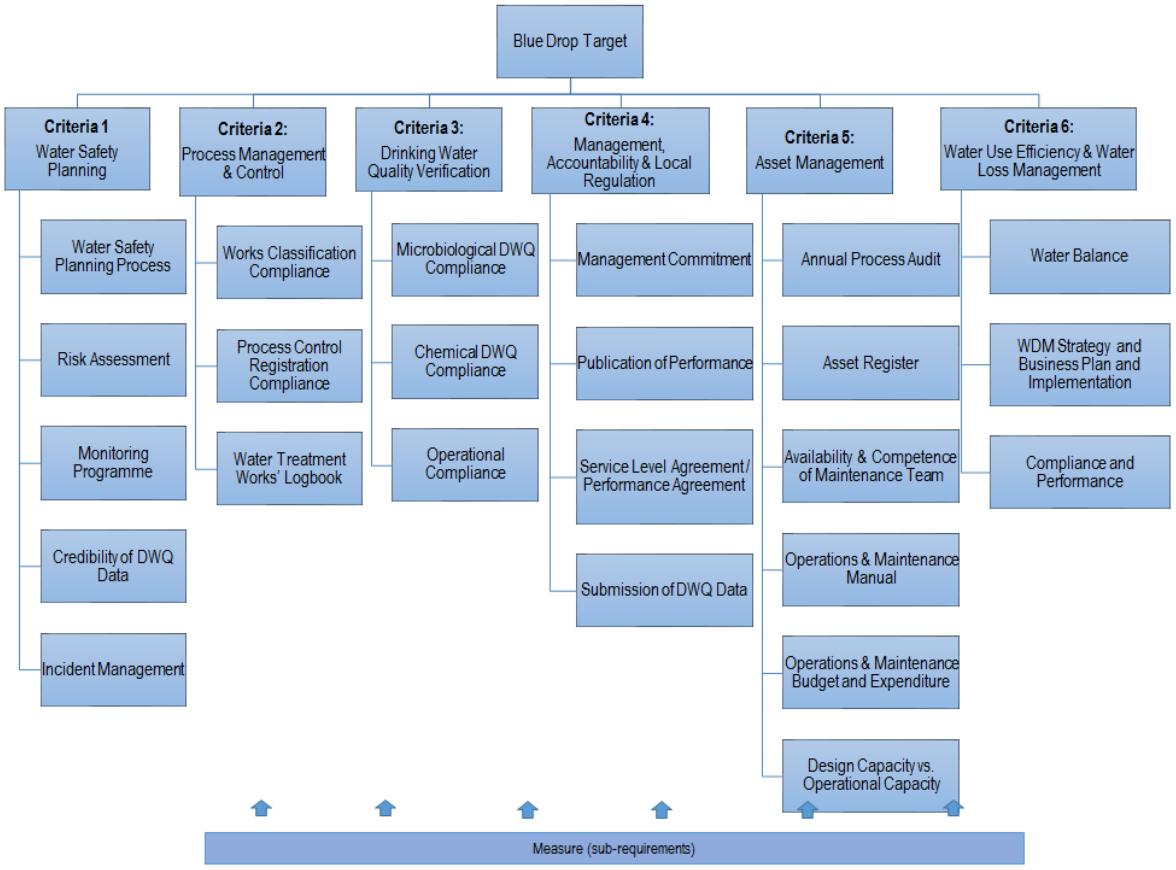


Figure 19: Hierarchical framework of the Blue Drop Certification Programme (adapted from DWA, 2014)

The Department of Water and Sanitation also launched the Green Drop Programme in **2008**, an incentive-based performance systems with the purpose to facilitate compliance of Water Service Authorities with regulatory objectives and standards for wastewater treatment (Ntombela, 2016). The Green Drop Programme, through good management, aimed to sustainably improve the quality of wastewater in South Africa. Good management was expected to be achieved by identifying and developing the core competencies required to manage wastewater in a sustainable manner. The DWS run the Green Drop Certification

audit, every second year, using a water services tool to measures and compares the performance of WSAs in their management of wastewater in their jurisdiction. The Green Drop Certification System was also structured in a hierarch performance monitoring structure of Criteria, Key Performance Indicators, Indicators and Targets (see Figure 20). Municipalities receive Green Drop status when they achieve scores of 90%, or higher, against the stringent Green drop assessment requirements, per individual wastewater system within the municipal area.

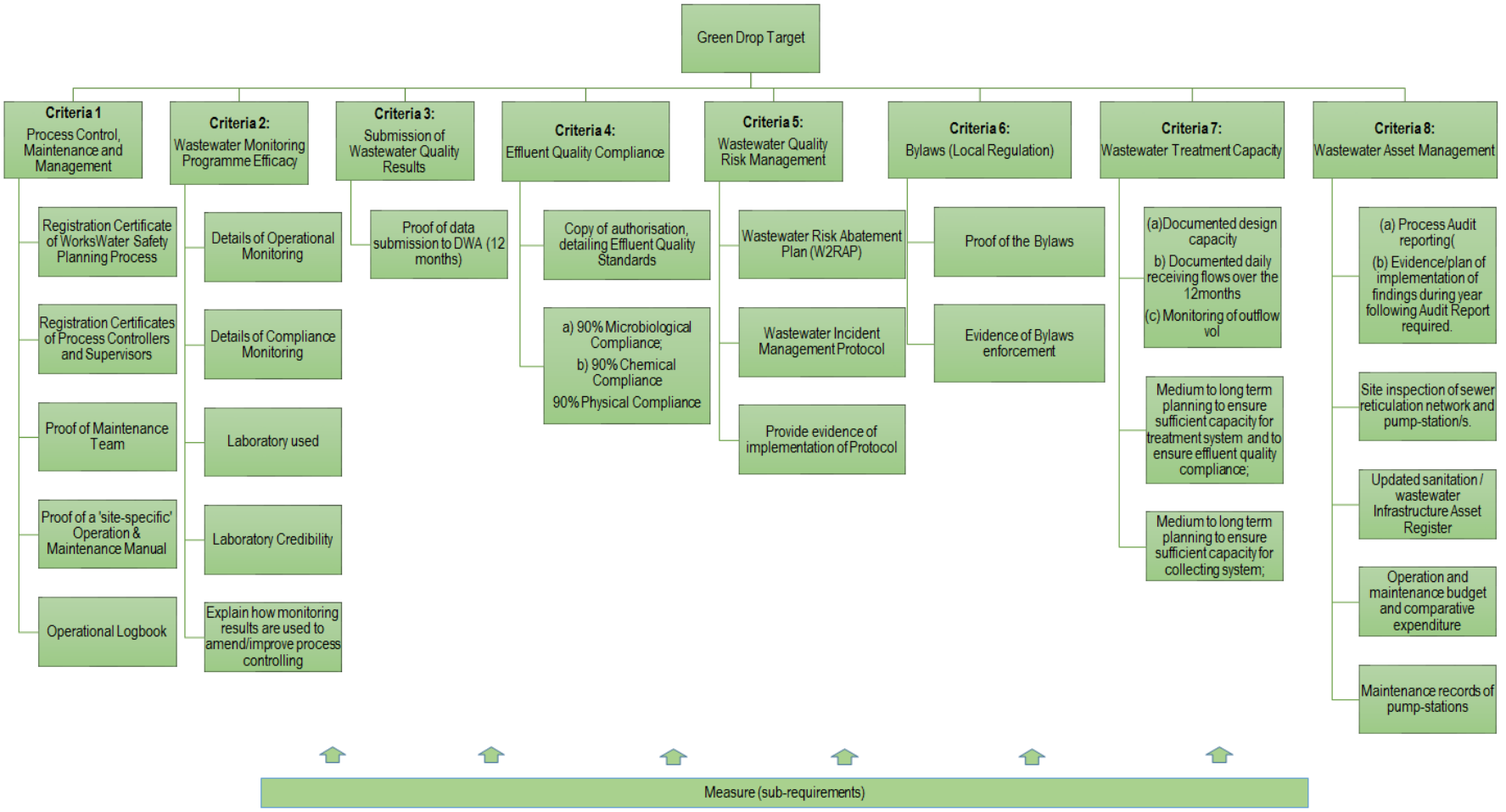


**Figure 20: Hierarchical framework of the Green Drop Certification Programme (adapted from DWA, 2013a)**

Criteria which were measured, using performance indicators, include the WSAs ability to control, maintain and manage wastewater processes, to develop a programme to monitor wastewater compliance, action this programme and ensure that effluent quality meets compliance requirements, to manage the risk associated with wastewater management, to address local regulations requirements for wastewater management, to ensure the capacity is in place to manage wastewater within their jurisdiction and to ensure asset management is in place. Thus, chiefly input/output indicator of the enabling environment required to provide safely management sanitation services.

Over the same period, the DWS introduced the Regulatory Performance Management System (RPMS). The RPMS was piloted by DWA during the 2007 to 2008 assessment period and implemented for the first time in the 2008 to 2009. The RPMS tool is a regulatory programme which has the objectives (Selowa, 2014):

- to improve business practice with regard to water services delivery in local government;
- to improve local government compliance with national norms and standards;
- to improve the impact of DWS regulatory processes through ensuring that responses to non-compliance are uniform and standardised across the country;
- to ensure that the data collected from local government is verifiable, accurate and useful to other processes; and
- to improve local government's capacity to deliver services through strategic feedback on problem areas by RPMS.

Like the Blue Drop Assessments, Green Drop and RPMS assessment are usually conducted every two years with an Assessment Reported published for each, indicating a score for each WSA and system in the assessment. A progress report is also produced in the alternative years.

The African Ministers' Council on Water (AMCOW) was formed in April 2002 in Abuja Nigeria, under the 'Abuja Ministerial Declaration on Water – A Key to Sustainable Development in Africa', giving *inter alia*, AMCOW the following monitoring and reporting functions (UNEP/DHI Partnership):

(b) to monitor progress in the implementation of major regional and global water initiatives;

(c) to review progress in the implementation of the commitments set forth in key international arrangements for the provision of financial resources and technology transfer in support of water sector reforms in Africa; and

(g) to consider, where appropriate, information regarding progress made or needed in the implementation of intergovernmental agreements on river and lake basins.

In **2008**, at the 11th ordinary session of the Africa Union (AU) Assembly in Sharm el-Sheikh, Heads of State and Government of the AU agreed on commitments to accelerate the achievement of the African water and sanitation goals. AMCOW was mandated to develop and follow up an implementation strategy for these commitments (AMCOW, 2010). The AU Heads of State and Government specifically called on AMCOW to report annually to the

Summit on the state of the continent's water resources. In response to this, AMCOW developed the African Water Sector and Sanitation Monitoring and Reporting system (African Water Facility, 2013). No reporting by AMCOW took place until the indicator and reporting system was operationalised.

The National State of the Environment Report, initiated in **2009**, was South Africa's first national assessment of the state of the environment. The SOE system was maintained by the Department of Environmental Affairs, reporting 9 datasets with 20 indicators of environmental sustainability. The purpose of these indicators was to provide an overview of the current condition of South Africa's environment, the pressures upon it and responses to those pressures (DEA, 2017). The indicators also provided a glimpse into what the future state of the environment may be like if current trends continued and suggested interventions that should be considered to address these negative trends.

The SOE system reports indicator under five components necessary for environmental sustainability, namely (DEA, 2017).

1. The state of environmental systems – focussing on monitoring the environmental systems that need to be maintained at healthy levels.
2. The stresses on environmental systems – focusses on monitoring the key human impacts that could potentially cause harm to environmental systems.
3. Human vulnerability to environmental change – includes indicators to monitor the people and social systems which are vulnerable to environmental change.
4. The social and institutional capacity to cope with environmental change – includes monitoring of the institutional capacity and underlying social patterns of skills, attitudes and networks necessary to foster effective responses to environmental challenges.
5. The ability to respond to the demands of global stewardship – monitors indicator the level of cooperation with other countries to manage common environmental problems.

Each component in the SOE system, in turn, encompasses between two and six indicators of environmental sustainability. Within the five components, a suite of water and sanitation indicators were reported (Figure 21). At least 4 of the components in the SOE have water and sanitation related indicators, including indicators of water resource, water supply and sanitation. Monitoring and reporting of these indicators was the responsibility of Department of Environmental Affairs (DEA). However, the data source for these indicators was usually the DWS.

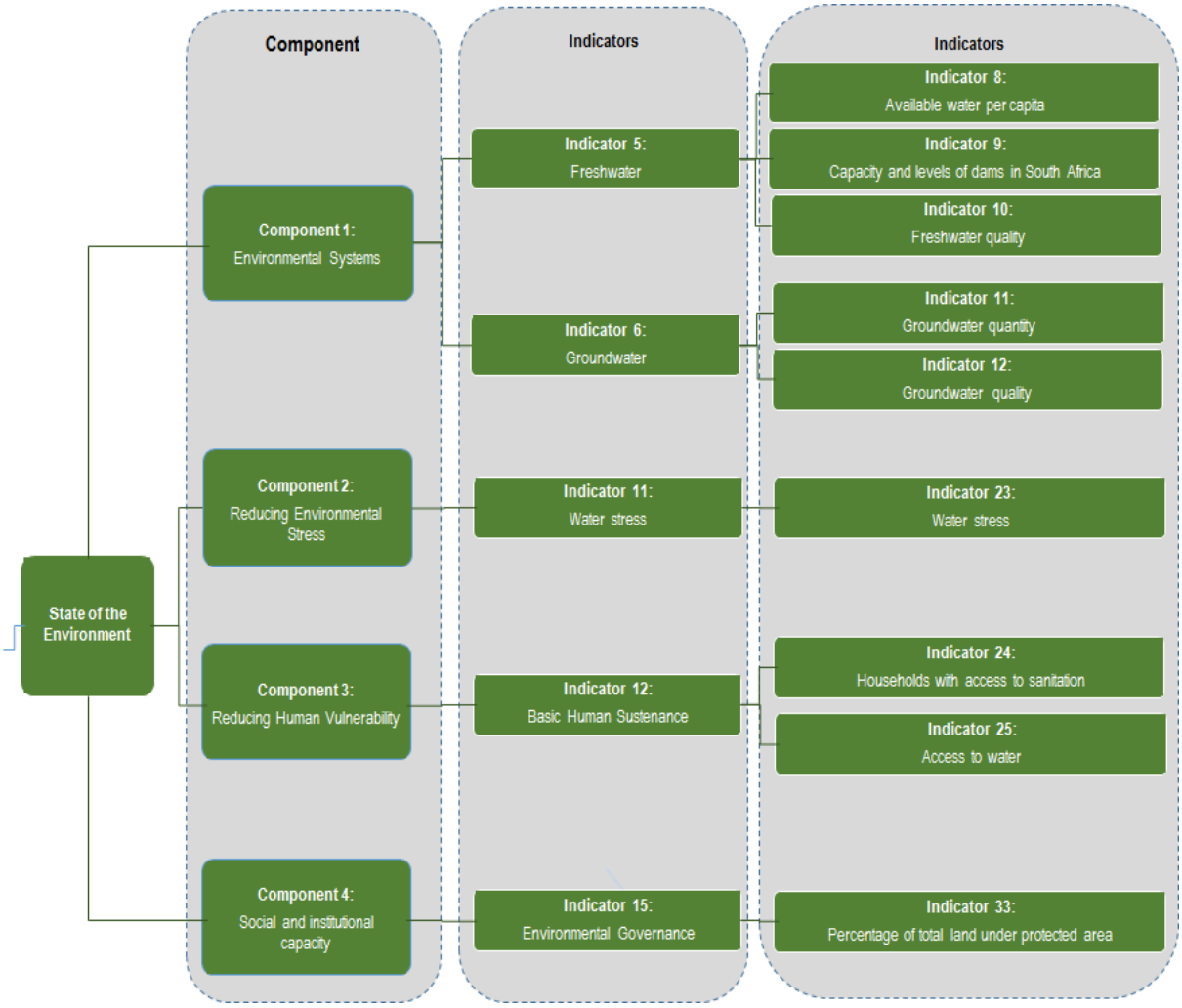


Figure 21: Water and sanitation related indicators of the State of Environment Reporting (DEA, 2017)

The suite of water supply questions in the General Household Survey also largely stabilised in **2010** with 14 questions to report the water supply indicators of:

Table 9: Indicators which are captured and reported form the 2007 GHS

| No. | Indicator | Description |
|---|---|---|
| **1** | Percent or number of households using each category of main water source | = partially reports households with a basic level of water supply (only partially as this indicator needs to be reported in conjunction with indicator 2 to determine whether the communal tap is within 200 m of the household) |
| **2** | Percent or number of households within each distance to source category | = contributes to indicator 1 |
| **3** | Percent or number of households reporting good/ bad water aesthetics (taste; colour; odour; smell) | = proxy for water quality |
| **4** | Percent or number of households reporting treating or not treating their water | = proxy for = perception of water quality |
| **5** | Percent or number of households using each category of main water source | = partially reports households with a basic level of water supply (only partially as this indicator needs to be reported in conjunction with indicator 2 to determine whether the communal tap is within 200 m of the household) |
| **6** | Percent or number of households with access to pipe municipal water sources | = proxy for access to improved basic water supply |

| No. | Indicator | Description |
|---|---|---|
| 7 | Percent or number of households rating good, average or poor municipal water services | = proxy for customer satisfaction with the services |
| 8 | Percent or number of households paying for water | = proxy for customer satisfaction with the services |
| 9 | Percent or number of households per non-payment reason category | = proxy for customer satisfaction with the services |
| 10 | Percent or number of households reporting interruptions per frequency category | = proxy for access to an improved basic water supply |
| 11 | Percent or number of households per category of reason for water interruptions | = proxy for customer satisfaction with water supply service |
| 12 | Percent or number of households per category of time taken to rectify the water supply problem | = proxy for access to an improved basic water supply |
| 13 | Percent or number of households receiving free basic water supply | = proxy for water equity |
| 14 | Percent of number of households with water supply interrupted for more than 15 days | = proxy for access to an improved basic water supply |

Interestingly, the 2009 GHS included a new section related to the environment, including a number of new questions. Within these section of the survey, were questions related to

- Whether households experience water pollution problems
- Whether the household cut down on the municipal water used?

These questions were however not captured in the GHS of following years.

Similar to the water supply questions in the 2002-2010 questionnaire, the sanitation questions remained relatively consistent, stabilising in 5 questions in **2010**, providing data to report the following sanitation indicators:

| No. | Indicator | Description |
|---|---|---|
| 1 | Percent or number of households using each category of sanitation | = access to improved sanitation |
| 2 | Percent or number of households (connected to a public sewer) who are paying for services | = payment for sanitation services |
| 3 | Percent or number of households sharing a toilet | = proxy for access to improved sanitation as each household should have access to a VIP |
| 4 | Percent or number of households with a toilet within the dwelling, yard or outside the yard | = proxy for access to improved sanitation |
| 5 | Percent or number of households with a toilet within each distance category | = proxy for access to improved sanitation |

The JMP continued to utilise the data from these surveys to report South Africa's progress with the MDGs. By 2010 the JMP was reporting that South Africa had progressed 9% in access to improved water supply, from 83% of households in 1990 to 91% of households in 2010 (Figure 22). South Africa had made greater progress with access to improved sanitation, improving 17%, from 68% of households in 1990 (including shared improved toilets) to 85% of households in 2010. South Africa had in fact, achieved the water supply MDG by 2010 (Figure 22).

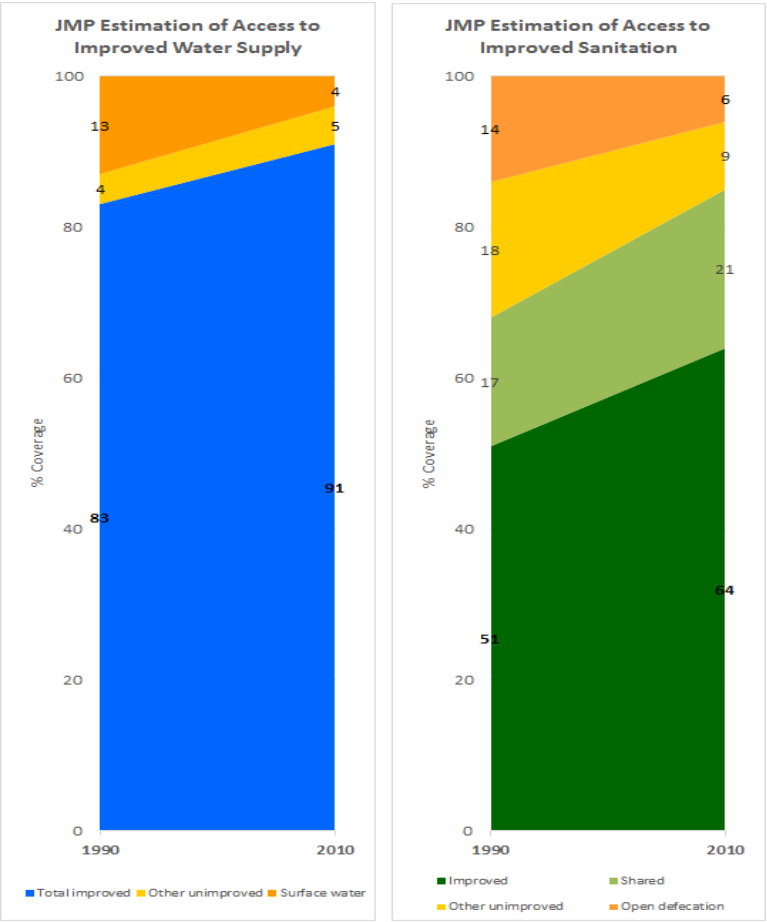


Figure 22: Progress with the MDGs in South Africa between 1990 and 2010 (taken from UN WATER AND WHO, 2015)

Internationally, the Human Right to Safe Drinking Water and Sanitation (HRTWS) was also adopted in 2010 under a United Nations (UN) Resolution calling for safe, affordable, acceptable, available, and accessible drinking water and sanitation services for all. Resolution 64/292 in the United Nations General Assembly acknowledged the importance of equitable access to safe and clean drinking water and sanitation as an integral component of the realization of all human rights (UN, 2010). The resolution reaffirmed the responsibility of States to promote and protect all human rights and that all these rights be treated in a fair and equal manner. The same resolution called on states and international organizations to provide financial resources, capacity-building and technology transfer, through international assistance and cooperation in particular to developing countries, in order to scale up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all (UN, 2010). This internal recognition of the right to water and sanitation just reaffirmed South Africa Constitutional recognition of the right in 1996. The country had already committed to ensuring universal access to the right to a basic sanitation and water service, as outline in the Constitution and water legislation of 1997 and 1998.

In the same year, the first report was published from UN-Water Global Analysis and Assessment for Sanitation and Drinking-Water (GLAAS). GLAAS was a new addition to the sanitation and drinking-water monitoring landscape, responding to a long-standing need for more information related to water supply and sanitation. GLAAS, which was implemented by WHO, had the objective to *monitor the inputs (human resources and finance) and the enabling*

*environment (laws, plans and policies, institutional arrangements, monitoring) required to extend and sustain WASH systems and services to all, and especially to the most disadvantaged population groups* (WHO, 2014). GLAAS also analysed the factors associated with progress, in order to identify drivers and bottlenecks, highlight knowledge gaps and assess strengths and challenges within and across countries.

Characteristics of the GLAAS assessment included (WHO, 2010):

- **complementing existing initiatives**, such as the JMP and the World Water Development reports and the ongoing MDG monitoring initiatives conducted by the United Nations (UN) system and by NGOs, multilateral agencies and governments
- focusing on monitoring of the **capacity** of countries, with the support of donors, to improve sanitation and drinking-water service delivery and levels;
- providing a **situational analysis** of donor aid activities, with a focus on trends, prioritization, targeting and coordination;
- developing a **summary report** of sanitation and drinking-water inputs and outputs, with the participation of country governments, donors, multilateral agencies and other partners;
- supporting **evidence-based policy-making** on sanitation and drinking-water at national, regional and global levels;
- being a **technical resource** for the political initiative Sanitation and Water for All: A Global Framework for Action, to accelerate progress towards achieving the water and sanitation MDG target.

A UN-GLAAS report was expected to be published every two years, reporting on a number of indicators across a range of water supply and sanitation characteristic. The process of reporting was a self-reporting process, where a country answers a number of questions within a questionnaire submitted to a reporting country. The UN-Water GLAAS report in 2010 covered 42 countries and 27 external support agencies, providing information on the following indicators under several categories (WHO, 2010):

| Reporting Category | Indicator | Description |
|---|---|---|
| **1. Finance:** | **Are financial flows sufficient to meet the MDG?** | Sanitation and drinking-water funds and external aid, and the adequacy of financial flows. To determine the adequacy of financial flows indicator in GLAAS the current and/or projected financial expenditures was assessed against estimated financial needs to address water supply and sanitation MDG targets backlogs in a country. |
| | **Have criteria, or a formula, been determined to allocate funding equitably to and within urban/rural communities for sanitation and drinking-water?** | GLAAS monitored whether participating countries had criteria to ensure equitable allocation of financial resources to the poorer regions of the country and addressed the needs of vulnerable people. |
| **2. Policy and Institution** | **Is there a policy agreed by stakeholders and approved by cabinet?** | GLAAS monitored whether government departments or agencies were guided by a specific policy directed to sanitation and drinking-water as the policy should have focussed on effective and efficient service delivery. |
| | **Are the roles of the institutional stakeholders clearly defined and operationalized?** | In this indicator, the development of a workable institutional frameworks is monitored |
| | **Is there an investment programme for sanitation and** | GLAAS monitored whether investment programmes, such as medium-term expenditure frameworks, |

| Reporting Category | Indicator | Description |
|---|---|---|
| 3. Setting National Coverage Goals and Monitoring | **drinking-water based on an MDG needs assessment that is published and agreed?** | capital improvement plans and national strategic development plans, help to improve intergovernmental coordination, predictability and transparency of budgeting and expenditure. |
| | **Over the past three years, has the effectiveness of the review process in aiding planning been decreasing, constant or increasing?** | GLAAS monitored the capacity of governments to monitor and evaluate the performance of sanitation and drinking-water uptake and services |
| 4. Budget and Expenditure | **Does the government budget comprehensively cover domestic and official donor investment/subsidy?** | GLAAS monitored the publicizing of sanitation and drinking-water budgets as this was deemed to establish transparency and enable stakeholders to identify priorities, funding sources and potential funding gaps. |
| | **What is the percentage of official donor commitments utilized (three-year average)?** | This indicator monitored that government rates of absorption of donor commitments |
| 5. Human Resources Development | **Are human resources addressed in national strategies or in annual sector reviews?** | GLAAS monitored the inclusion of human resources needs in national strategies and annual reviews of water supply and sanitation. |
| | **Are there in-country education and training institutions for drinking-water and sanitation professionals?** | The indicator monitored whether one or more opportunities for water supply and sanitation training and education exist in-country |
| 6. Stakeholder Coordination and Harmonization | **Are there clearly defined procedures for informing, consulting with and supporting local participation in planning, budgeting and implementing programmes?** | This GLAAS indicator monitored the consultation and coordination with local stakeholders and donor aid partners, which were seen as crucial to ensure that all the other indicators are fully owned by stakeholders and that users receive the services that they want and are willing to pay for. |

In the 2010 GLAAS Report, South Africa was report as one of only two responding countries (the other being Kenya) to have had more than 75% of the finance required to meet the water supply and sanitation MDGs (Figure 23a), and one of five countries that used equitability criteria in allocation of funds for water supply and sanitation (Figure 23b) (WHO, 2010). South Africa was however the only sub-Saharan responding country which achieve both indicators for both water supply and sanitation.

Figure 23c showed that South Africa, in 2010, indicated that a water supply and sanitation policy had been agreed by stakeholders but had not yet been gazetted. Hence, the policy positions were not yet a regulatory requirement in the country. Figure 23d also showed that in 2010 South Africa had clearly defined water supply and sanitation roles for the sector.

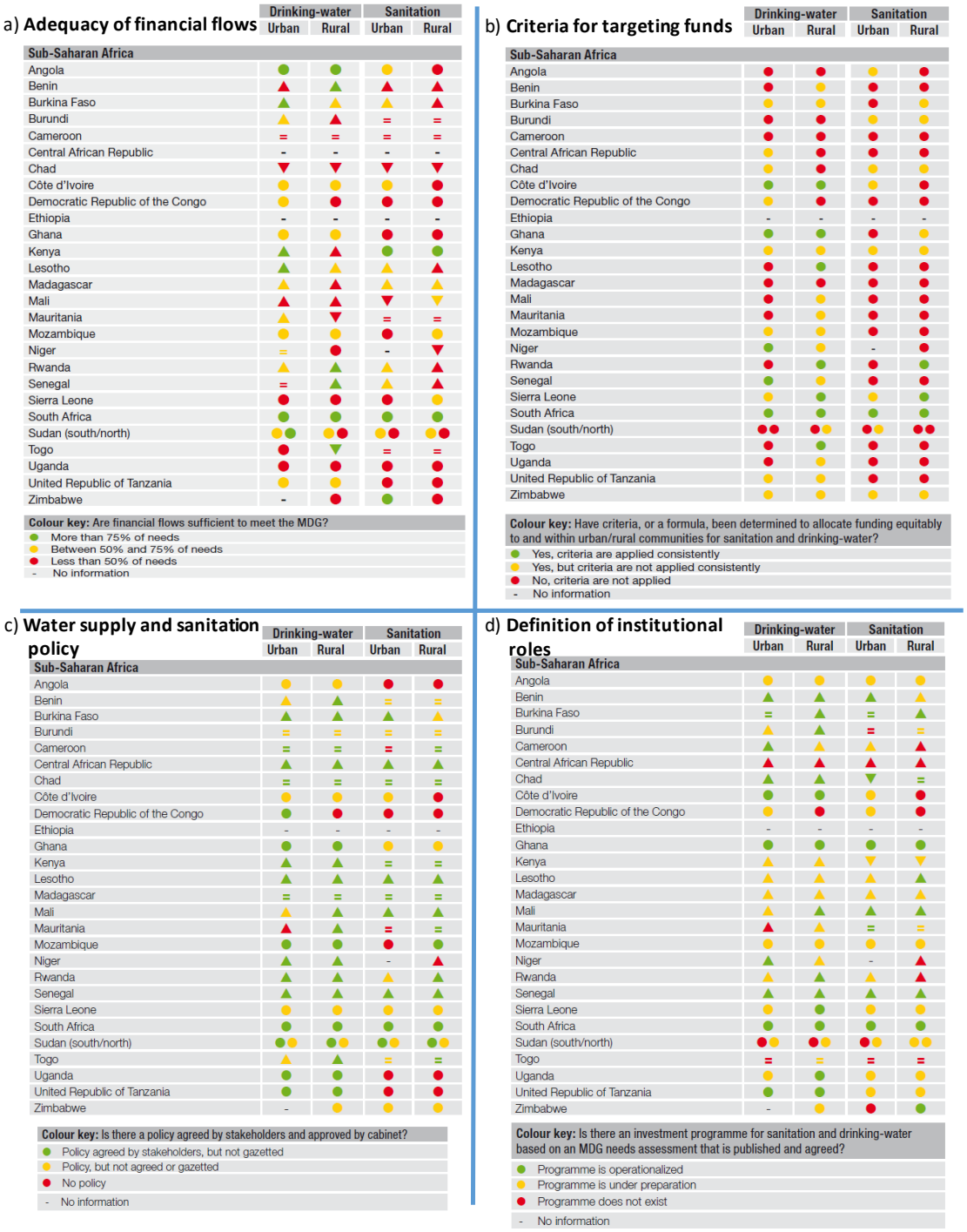


**Figure 23: a) Adequacy of sanitation and water supply finance available by countries; b) use of equitability criteria to allocation funds; c) policy adoption an implementation and d) definition of institutional roles (taken from WHO, 2010)**

Figure 24e also showed that in 2010 South Africa reported having a needs-based investment programme for the provision of water supply and sanitation to achieve the MDGs. Similarly, Figure 24f showed that almost half of the countries (17 out of 38 respondents) reporting to GLAAS indicated that an annual review was missing for either sanitation or drinking-water, urban and/or rural. However, South Africa was one of two countries which indicated an annual review of both water supply and sanitation and the setting of new undertaking for both on an annual basis. In Figure 24g showed that budget transparency was lacking in many sub-

Saharan countries for sanitation and drinking-water. However, South Africa reported budget transparency for both urban/rural water supply and sanitation in 2010, due to most (>75%) of this budget being allocated from the national fiscus. South Africa reported that over 75% of donor funding was utilised in supply of water and sanitation in Figure 24g.

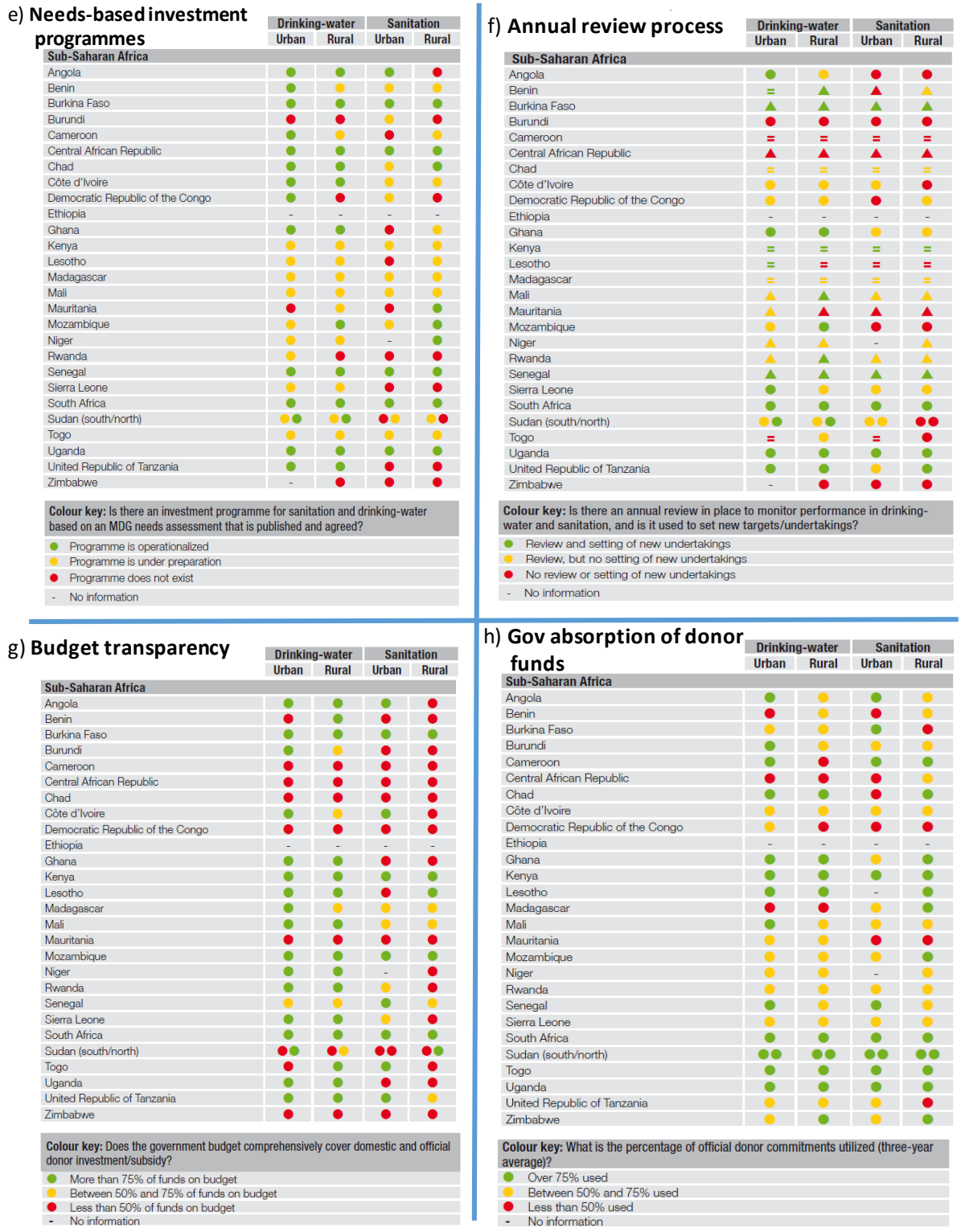


**Figure 24: e) needs-based investment by countries; f) annual review process for water supply and sanitation; g) budget transparency and h) government absorption of donor funding (taken from WHO, 2010)**

South Africa thus demonstrated positive results for most of the GLAAS indicators, showing that the finance, policy and monitoring was in place to achieve the MDGs by 2015. There therefore seemed to be little financial, policy or monitoring barrier to the country reaching both the water and sanitation MDGs.

### 2.2.7 The 2011 South Africa National Census

The second post-democratic national census was conducted in South Africa from 9-31 October **2011**. All households were included in this survey, resulting in the completion of over 15 million questionnaires (StatsSA, 2012).

The 2011 Census questionnaire included a number of additional water supply questions when compared to the 2001 questionnaire (Appendix 4), while the sanitation question remained unchanged (Appendix 4).

Figure 25 showed an increase in the proportion of households which had access to piped water within 200 m of the dwelling between the 1996 and 2011 census, increasing from 79,5% in 1996 to 85,1% in 2011 (base on the White Paper definition of improved water supply). Census data showed that the number of households with access to improved sanitation (based on the White Paper definition) had increased from 49,8% of households in 1996 to 68,8% of households in 2011 (Figure 25). It is clear from Figure 25 that changes in the water supply and sanitation Census survey questions and answer categories in the various census surveys impacted on the ability to make comparison in the results of these surveys. This seems to be particularly true for the 1996 and 2001 Census data – with the 2001 Census perhaps providing the most accurate starting point for comparison of access to improved services. The 1996 Census was conducted at a time when the country was still amalgamating and determining provincial boundaries.

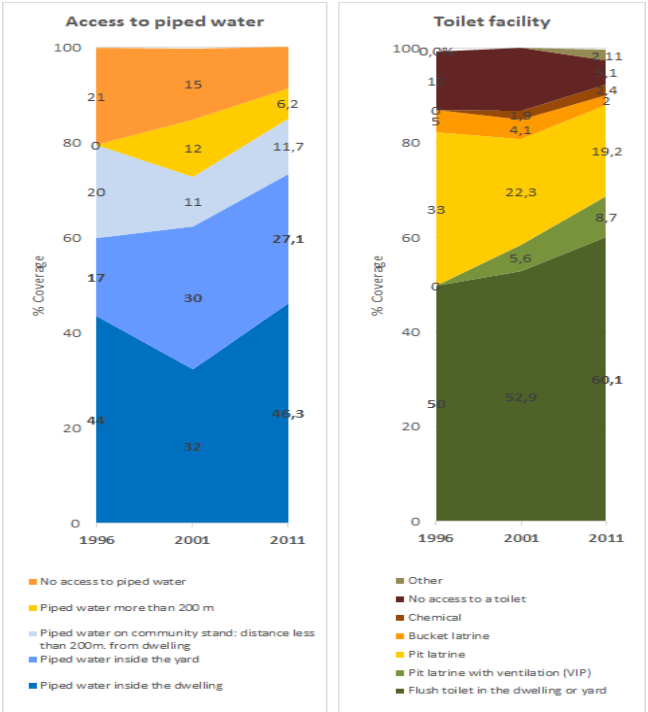


Figure 25: Water supply and sanitation access based on 1996-2011 national census results (source: StatsSA, 1996; 2011)

Also in **2011**, the voluntary The Municipal Benchmarking Initiative (MBI), manged by South African Local Government Association (SALGA) in partnerships with the Water Research Commission (WRC) and the Institution of Municipal Engineering of Southern Africa (IMESA), was established. The focus of the MBI was to improve municipal water services performance measurement and management in six performance areas, namely (SALGA, WRC and IMESA, 2015).

1. Water conservation and demand management
2. Human resources and skills development
3. Service delivery and backlogs
4. Operations and maintenance
5. Product quality
6. Financial management

Performance was monitored and reported using 37 performance Indicators (PIs) under each of the six performance areas (Figure 26). These performance indicators had, where possible, not duplicated information which was already monitored and reported by other national sectoral objectives, focussing rather on core organisation and operational management parameters which were essential for sustainable water service delivery (SALGA, WRC and IMESA, 2015). The NBI made use of a mix of indicators, with the majority focussing on input/output indicators of the enabling environment required for water and sanitation service provision.

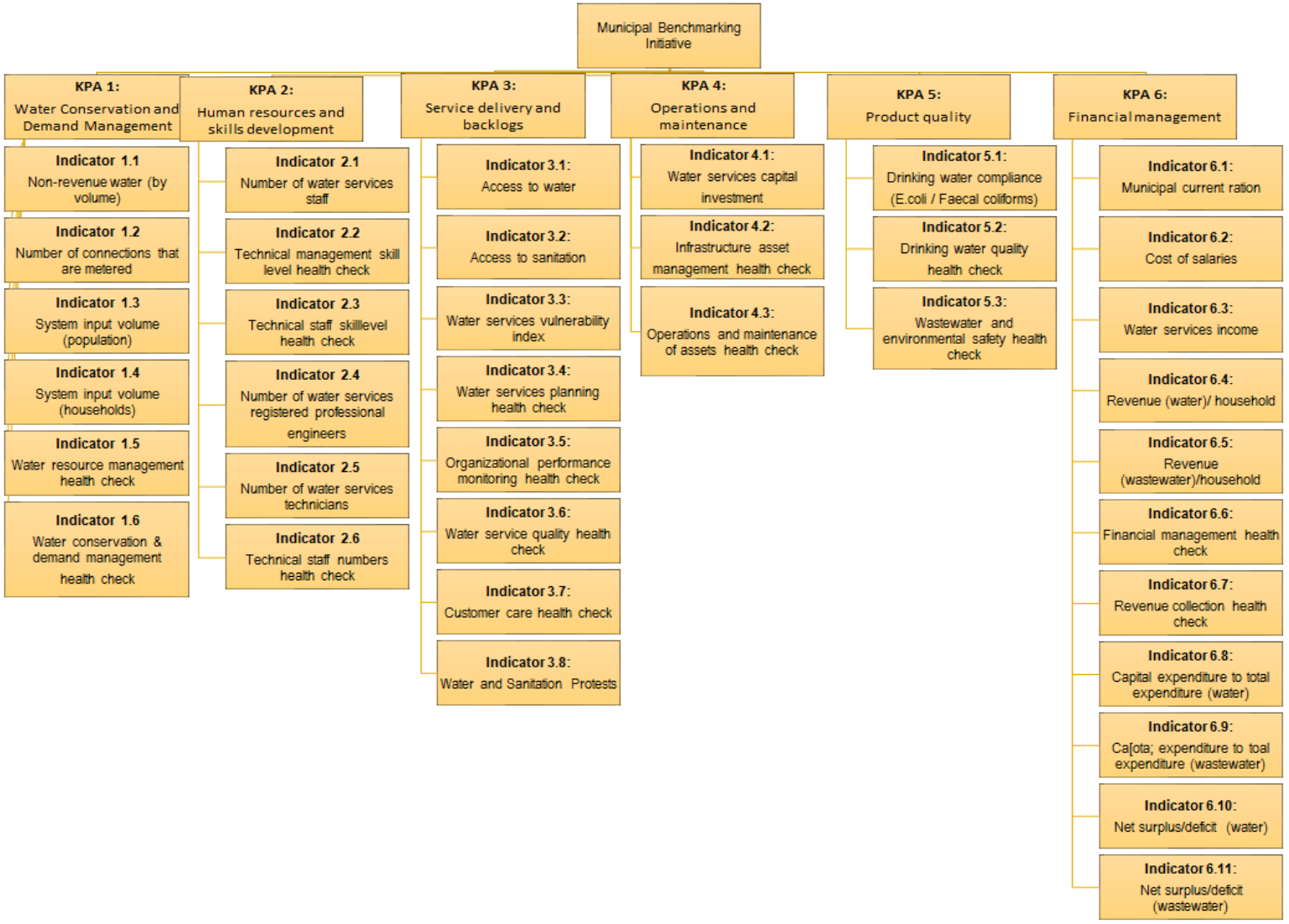


**Figure 26: National Benchmarking Initiative performance areas and performance indicators (taken from SALGA, WRC and IMESA, 2015)**

### 2.2.8 Monitoring with the General Households Survey and other international mechanisms: 2012-2015

South Africa continued to monitor progress with the MDGs and access to improved water supply and sanitation using the annual General Households Survey of 2012-2015. The design of the Master Sample for these surveys was however, based on information collected during the 2011 Census. The census enumerated areas in the 2011 were used as the frame units or building blocks for the formation of primary sampling units (PSUs) for the Master Sample (DataFirst, 2015). There were 3 324 primary sampling units (PSUs) in the Master Sample, with an expected sample of approximately 33 000 dwelling units (DUs). This reflected an 8, 0% increase in the size of the Master Sample compared to the previous (2008) Master Sample, improving the precision of the GHS estimates. The Master Sample was also designed to be representative at provincial level and within provinces at metro/non-metro levels.

The GHS of **2012-2015** continued to use questions very similar to the previous surveys, with only minor additions to the survey (Appendix 3). The survey did focus more on determining the distance to a toilet facility, if the facility was not in the dwelling. Hence, measurement of effort to reach the facility was monitored from 2012 onwards.

The second UN-Water GLAAS report was published by WHO in **2012**, reporting on data received from 74 developing countries and 24 external support agencies (ESAs). GLAAS used several existing sources of data for the water supply and sanitation reporting, including global data on sanitation and drinking-water coverage (JMP), donor aid flows (OECD-CRS), economic and development indicators (World Development Indicators, World Bank), health indicator data (World Health Statistics, WHO) and data from regional assessments (WHO, 2012). The 2012 GLAAS continued to use two survey questionnaires to collect information from ESAs and developing countries. The questionnaire for the ESAs, which was slightly modified from the previous version, requested information on aid prioritization, aid flows, future planning, donor coordination and alignment with country programmes (WHO, 2012). There were eight building blocks in the drinking-water and sanitation sections of the questionnaire, including (WHO, 2012):

1. Current access
2. Policies and institutions
3. Planning, monitoring and evaluation
4. Budgeting and expenditure
5. Equity
6. Outputs
7. Sustainability
8. Human resources

The GLAAS responses were filled in by respondent countries through a process of self-reporting (WHO, 2012). This required countries to judge their status on the indicators in the questionnaire and to award themselves appropriate scores.

GLAAS 2010 indicated that there were substantial gaps in the understanding and tracking of financing to the water supply and sanitation sector. As a result, the WHO launched the Track Fin initiative as part of GLAAS in September **2012**. TrackFin was developed in collaboration

with leading country sector institutions, national statistical offices, finance departments, and international entities such as the UN Statistics Division, the OECD and the World Bank, and with support of a Technical Advisory Group comprising sector and finance experts (UN-Water and WHO, 2015).

The objectives of the TrackFin initiative was to enable countries to track sector financing using standardized classifications, and to develop a set of WASH accounts and indicators presented in a format comparable across regions and countries. It aimed to answer four basic questions (UN-Water and WHO, 2015):

- What was the total expenditure in the sector?
- How were funds distributed between the various WASH services and expenditure types, such as capital expenditure, operating and maintenance expenditure, and cost of capital?
- Who paid for WASH services?
- Which entities were the main channels of WASH funding, and what is their respective share of total spending?

A guidance document was developed to guide countries in developing WASH accounts and reporting financial indicators to develop these accounts. The TrackFin WASH accounts indicators, shown in Figure 27, will need to be systematically estimated, including by South Africa, using the same parameters to ensure international comparability.

1. Total WASH sector expenditure at the national level
2. Total WASH expenditure per capita at the national level
3. Total WASH expenditure in the country as a percentage of GDP (This can be compared to the total health expenditure as a percentage of GDP)
4. Expenditure on sanitation as a percentage of total WASH expenditure
5. WASH expenditure in the urban sector as a percentage of total WASH expenditure
6. Public expenditure on WASH as a percentage of total public expenditure (Public expenditure includes funding from national, regional and local authorities, bilateral and multilateral donors for all domestic public transfers, and international public transfers and public loans)
7. User expenditure as a percentage of total WASH expenditure (the sum of FT1 Tariffs, and FT2 User self-expenditure)
8. Domestic public transfers as a percentage of total WASH expenditure
9. International public transfers as a percentage of total WASH expenditure
10. Total maintenance and operating costs as a percentage of total WASH expenditure

Figure 27: Key WASH indicator required to develop a WASH account and reporting to TrackFIN (UN-Water and WHO, 2015)

The South African Government also adopted a National Infrastructure Plan in **2012**, with the aim to transform the economic landscape of the country while creating new jobs and delivering basic service Constitutional imperatives such as healthcare facilities, schools, water, sanitation, housing and electrification. The National Infrastructure Plan comprised of 18 Strategic Infrastructure Projects (SIP), which prioritised future projects and infrastructure initiatives from state-owned enterprises, national, provincial and local government departments (Presidency, 2015c). A number of SIPs had water and sanitation infrastructure imperatives, including:

| STRATEGIC INFRASTRUCTURE PROJECTS | WATER AND SANITATION INTENTS |
|---|---|
| **SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst** | Had as the intent to, amongst other, ensure water pipelines to the belt. |
| **SIP 4: Unlocking the economic opportunities in North West** | Had the imperative of accelerating investment in, amongst others, bulk water and water treatment and enabling reliable supply and basic service delivery in this province. |
| **SIP 5: Saldanha-Northern Cape Development Corridor** | Had water and sanitation indicators of development of the Vaal-Gamagara Bulk Water Supply Scheme Clanwilliam Dam Project to support the development of Saldanha in the Northern Cape Development Corridor |
| **SIP 7: Integrated urban space and public transport programme** | SIP 7 focused specifically on integrated human settlement planning in the 12 largest urban centers in the country, including the metros. Water and sanitation indicators related to the completion of the Mooi-Mgeni Transfer Scheme and projects on Acid Mine Drainage were included in monitoring of the SIP. This SIP is monitored through the Outcome 8 indicators MTSF indicators. |
| **SIP 11: Agri-logistics and rural infrastructure** | This SIP had the focus of improving investment in agricultural and rural infrastructure including support to irrigation schemes in poor areas of the country. This SIP imperative was monitored through *MTSF Outcome 7: Vibrant, equitable and sustainable rural communities with food security for all* within the Sub-Outcome 7.4 of smallholder producers' development and support (technical, financial, infrastructure) for agrarian transformation. The Sub-outcome has the Action 7.4.2 Expand land under irrigation, which is monitored by Indicator 7.4.2.1 Number of new hectares under irrigation used by smallholder producers |
| **SIP 13: National school build programme** | This SIP had the focus of replacing inappropriate school structures and addressing basic service backlog and provision of basic services under the Accelerated School Infrastructure Delivery Initiative (ASIDI). The objective of ASIDI was to eradicate schools water supply and sanitation backlogs, amongst others. Three of the four sub-programmes of the ASIDI Programme related to water and sanitation, namely:<br>• ***Sub-programme 1:*** Inappropriate Structures: schools that were built from inappropriate material in their entirety were replaced with new schools that meet the department's standards of basic functionality, including in water supply and sanitation.<br>• ***Sub-programme 2:*** Providing Sanitation: schools that previously did not have access to sanitation are supplied with at least a basic level of sanitation.<br>• ***Sub-programme 4:*** Providing Water: school that do not have access to water are provided with basic water supply.<br>Progress with these sub-programmes is monitored through Outcome 1 of the MTSF. |
| **SIP 17: Regional integration for African cooperation and development** | This SIP had the intent to participate in mutually beneficial infrastructure projects related to African economies, including transport, water and energy projects. This intent is actioned through MTSF Outcome 6: An efficient, competitive and responsive economic infrastructure network, Sub-Outcome 6.4: Maintenance and supply availability of our bulk water resources ensured. This sub-outcome is actioned through Action 6.4.5: SIP 17 Regional Integration for African cooperation and development which is monitoring by Indicator 6.4.5.1 Lesotho Highlands Phase 2 – on-budget and schedule delivery of 470 million m3 per annum. Hence progress with this SIP is monitored and reported through the indicators of Outcome 6 of the MTSF (See Section 2.1.5 for more details). |

Of note was SIP 18, which was a 10-year plan to address the estimated 1.4m households without water and 2.1m households without basic sanitation (FFC, undated). Projects provided for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improve management of water infrastructure (FFC, undated). SIP 18 was expected to drive economic growth imperatives and broader social concerns, addressing the infrastructure imperatives of (FFC, undated):

- providing infrastructure that stimulates economic growth and job creation
- maintain existing infrastructure
- providing infrastructure and services to the poor in order to eradicate poverty.

The measurement and reporting of progress of SIPs were largely through the MTSF outcomes, with indicators from the two processes linked to be able to monitor and report indicators in a complementary manner. Progress with SIP 18 interventions were monitored and reported through the MTSF Outcome 6: An efficient, competitive and responsive economic infrastructure network indicators and targets.

The 2012 SIPs were followed in **2013**, by a National Water Policy Review which provided amended policy positions for the water sector of the country. A number of the new or amended water policy positions emerged which impacted on the water supply sector of the country, including:

- A multiple water use approach, which incorporated all water uses in an area including water supply, must be adopted in planning of bulk water infrastructure. This required that water supplies were planned to provide more than just the basic minimum water supply – with the responsibilities linked to this being recognised.
- A basic water supply facility was defined as the infrastructure necessary to supply potable water to a formal connection at the boundary of a stand. This was a shift the definition of basic water supply services, from a basic being a supply within 200 m of a household to that of a yard connection.
- Free basic water supply would be provided to only indigent households, with the free basic water supply being 25 litres per person per day.

Effectively, South Africa had made the definition of an improved based water supply even more challenging, indicating that households would only be deemed to have access to an improved water supply if this supply was a tap within the dwelling or within the yard (Table 10). All the other categories of improved water supply, including those outlined by the MDG, would not meet the South African definitional requirements. The levels of acceptable improved basic sanitation remain unchanged from the 1994 White Paper.

**Table 10: Levels of accepted improved water supply and sanitation in 2013**

| | Categories of Water Suppy | Categories of Sanitation |
|---|---|---|
| 2013 NWPR | Piped water inside dwelling | Flush toilet (connected to sewerage system) |
| | Piped water inside yard | Flush toilet (with septic tank) |
| 1994 White Paper | Piped water on community stand: distance less than 200m. from dwelling | Pit toilet with ventilation (VIP) |
| | Piped water on community stand: distance greater than 200m. from dwelling | Chemical toilet |
| | Borehole | Pit toilet without ventilation |
| | Spring | Bucket toilet |
| | Rain-water tank | None |
| | Dam/pool/stagnant water | Other |
| | River/stream | |
| | Water vendor | |
| | Other | |

In the same year (**2013**) South Africa published the National Development Plan (NDP). The socio-political landscape had changed in the country, with developmental, resource, services and policies having being developed and implemented since the advent of the 1994-1998 water and sanitation policies in the country. The development agenda had updated and was now driven by performance-based implementation and monitoring. The most recent development agenda in the country was that designed to inform the election-term of 2014-2019. Each governmental election had a suite of manifestos published by the various political parties' participation in the election. The winner of the election utilised this election manifesto

as their policy to govern the country in the 5-year elected term. As the ruling party, the ANC's Manifestos underpinned the policy and governance of South Africa, including the socio-political environment of the water and sanitation sector of the country. The most recent ANC Policy (**2014**) indicated that over the period (2014-2019) the party and thus government since the ANC was the ruling party, would build on the progress made in implementing the five priorities in the 2009 Manifesto of*:*

1. Creating more jobs, decent work and sustainable livelihoods for inclusive growth
2. Rural development, land reform and food security
3. Education
4. Health
5. Fighting crime and corruption

These national development imperatives were expanded and articulated, beyond the 5-year election term, in the National Development Plan (NDP) of **2013**. The NDP provided the development path for South Africa until 2030, with a number of key intentions and actions having relevance and requiring changes to the water and sanitation sector of South Africa. The imperative of the NDP was that the country had (1) a capable and developmental state which was able to act to redress historical inequities and (2) a vibrant and thriving private sector able to investment, employ people and penetrate global markets (Presidency, 2012). According to the NDP, a developmental state *tackles the root causes of poverty and inequality, intervening to support and guide development so that benefits accrue across society (especially to the poor), and build consensus so that long-term national interest trumps short-term, sectional concerns* (Presidency, 2012).

To address the development intent, the NDP had the vision that by 2030 all people in the country had water and use a toilet. Water supply and sanitation targets set in the NDP were:

- By 2030, it was envisaged that effective management of water and the services derived from it would support a strong economy and a healthy environment.

- Before 2030, all South Africans would have affordable, reliable access to sufficient safe water and hygienic sanitation. Service provision arrangements would vary in different parts of the country, with different approaches adopted for densely built-up urban areas and scattered rural settlements. However, alternative solutions such as community based management, local franchising or the use of regional water utilities would be allowed if they would be more effective

The NDP also indicated that the Department of Basic Education had committed itself to eradicating 496 inappropriate structures, providing basic water to 1 257 schools, providing basic sanitation to 868 schools and providing electricity to 878 schools in the 2012/13 financial year.

The short-medium terms actions (5-year) to address the NDP imperatives were outlined in the Medium Term Strategic Framework for South Africa (MTSF) (Presidency, 2014). The MTSF provided government's comprehensive plan for implementing the National Development Plan and the commitments in the manifesto of the ANC as the governing party. The government and thus MTSF was focussed on addressing 12 outcomes for 2014 to 2019, with each of these outcomes published as annexures to the Medium Term Strategic Framework. These

outcomes provide strategic focus for national actions in this implementation period (Presidency, 2014). Figure 28 below showed the linkages between the 15 chapters in the NDP and the 12 MTSF outcomes.


Figure 28: linkages between the chapters in the NDP and the MTSF outcomes

The articulation of the 12 government outcomes in the MTSF was based on a performance-based approach to public service delivery in the country, involving management using a logic model which links inputs, activities, outputs outcomes and impacts in their planning and implementation activities.

Table 11 showed the water supply and sanitation indicators which are currently monitored and reported as part of the reporting of progress with MTSF interventions.

Table 11: Summary of MTSF Outcomes which have water and sanitation indicators and thus monitoring and reporting requirements for this sector (taken from the Presidency, 2014)

| MTSF Outcome | Sub-Outcome | Water and Sanitation-related Indicators |
|---|---|---|
| **NDP Chapter 4: Economic Infrastructure** | | |
| **Outcome 6:** An efficient, competitive and responsive economic infrastructure | **Sub-outcome 2**: Reliable generation, transmission and distribution of energy ensured: electricity, liquid fuels, coal, and gas | **Indicator 6.2.1.2:** Mokolo Crocodile Water Argumentation Project (MCWAP) Phase 1 |
| | | **Indicator 6.2.1.3:** Olifants River Water Resources Development Project (ORWRDP) Phase 2D Bulk Distribution |
| | **Sub-outcome 4**: Maintenance and supply availability of our bulk water resources infrastructure ensured: dams and inter-basin transfers, bulk water and wastewater | **Indicator 6.4.1.1** Mzimvubu Water Project 1. TCTA to finalise the funding strategy 2. DWS to direct TCTA to implement the scheme with Eskom to implement the hydro power project, |
| | | **Indicator 6.4.2.1** Vaal-Gamagara Bulk Water Supply Scheme – DWS/Sedibeng Water to commence with the upgrading of the Vaal-Gamagara Bulk Water Supply Scheme when funding is secured. TCTA to facilitate with contractual project finance model |
| | | **Indicator 6.4.2.2 C**lanwilliam Dam Project – DWS to expand the yield capacity of the Clanwilliam Dam by increasing the height of the wall by 13 meters thereby increasing the yield by an additional 70 million cubic meters of water per annum. |
| | | **Indicator 6.4.3.1** Mooi-Mgeni Transfer Scheme – TCTA |
| | | **Indicator 6.4.3.2** Current project: Acid Mine Drainage: TCTA to complete the short term solution and DWS to make available funds for the Western and Eastern Basins.<br>Rand Water to complete the long term solution |
| | | **Indicator 6.4.4.1** SIP projects implemented according to timeframes and budgets |
| | | **Indicator 6.4.4.2** Establish a national water-resources infrastructure agency that owns and support the development of infrastructure and facilitates borrowing, fiscal independence and equity in raw water prices |
| | | **Indicator 6.4.4.3** Develop comprehensive investment programme for water-resource development, bulk-water supply and wastewater management, assessing requirements to achieve universal access, including Mzimvubu dam |
| | | **Indicator 6.4.4.4** Finalise the future institutional arrangements for the management of water-resources: Submit Institutional Review to Cabinet; Percentage completion in establishing catchment management agencies/other institutions required |
| | | **Indicator 6.4.4.5** Establish regional water and waste-water utilities to support municipalities: Implementation plan approved, Implementation of approved plan, and quarterly reporting. Percentage of municipalities covered by approved functional regional utilities created |
| | | **Indicator 6.4.4.6** Carry out review of existing water allocations in areas where new users are seeking access but current users already take more than can reliably be provided |
| | | **Indicator 6.4.4.7** Urgent review of water and sanitation norms and standards together with the financial provisions to meet these |
| | | **Indicator 6.4.4.8** Additional water supplies for Lephalale area: Mokolo and Crocodile River (West) Augmentation Project phase 1 |
| | | **Indicator 6.4.4.9** Investigate and implement water re-use and desalination projects and continue with applied research: Cabinet memorandum on research findings |

| MTSF Outcome | Sub-Outcome | Water and Sanitation-related Indicators |
|---|---|---|
| | | **Indicator 6.4.4.10** Establish a dedicated national programme to provide support to local and sectoral efforts to reduce water demand and improve water-use efficiency in the Agricultural sector |
| | | **Indicator 6.4.5.1** Lesotho Highlands Phase 2 – on-budget and schedule delivery of 470 million m3 per annum |
| **NDP Chapter 5: environmental sustainability and an equitable transition to a low-carbon economy** | | |
| **MTSF** Outcome 10: Protect And Enhance Our Environmental Assets And Natural Resources | **Sub-Outcome 10.1** Ecosystems are sustained and natural resources are used efficiently | **Indicator 10.1.1.1:** Percentage reduction of projected demand for 9 large water supply systems |
| | | **Indicator 10.1.2.1:** Percentage of water use license applications processed |
| | | **Indicator 10.1.2.2:** Number of water resources classified |
| | | **Indicator 10.1.2.3:** Number of sites with River Health Programme implemented |
| | | **Indicator 10.1.3.1:** Number of significant, integrated water-related ecological infrastructure maintenance or improvement interventions |
| | | **Indicator 10.1.7.2:** Number of catchments identified for Acid Mine Drainage |
| | | **Indicator 10.1.7.3:** Number of mines monitored for non-compliance in accordance with water license conditions |
| | **Sub-Outcome 10.2** Am effective climate change mitigation and adaption response | **Indicator 10.1.9.1:** Hectares of land under rehabilitation/restoration |
| | | **Indicator 10.1.9.2:** Number of wetlands rehabilitated |
| | | **Indicator 10.2.1:** Number of sector adaptation strategies/plans completed |
| **NDP Chapter 6: Integrated and inclusive rural economy in the country** | | |
| Outcome 7: Vibrant, equitable and sustainable rural communities with food security for all | **Sub-Outcome 7.4:** Smallholder producers' development and support (technical, financial, infrastructure) for agrarian transformation | **Indicator 7.4.2.1:** Number of new hectares under irrigation used by smallholder producers |
| | **Sub-Outcome 7.5:** Increased access to quality basic infrastructure and services, particularly in education, healthcare and public transport in rural areas | **Indicator 7.5.1.1:** Number of school infrastructure projects being implemented |
| | | **Indicator 7.5.1.2:** Number of education infrastructure projects completed |
| | | **Indicator 7.5.1.3:** Number of education infrastructure projects being implemented |
| | | **Indicator 7.5.2.1:** Number of health infrastructure projects completed |
| | | **Indicator 7.5.2.2:** Number of health infrastructure projects being implemented |
| | | **Indicator 7.5.4.1:** Number of rural households with access to safe drinking water (in the house, yard and 200 m from the house |
| | | **Indicator 7.5.6.1:** Number of rural house with access to sanitation services |
| | | **Indicator 7.5.6.2:** Number of buckets eradicated in formally established areas |
| **NDP Chapter 8: Sustainable Human Settlements and Improved Quality of Household Life** | | |
| **Outcome 8:** Sustainable human settlements and improved quality of household life | **Sub-outcome 8.1:** Adequate housing and improved quality living environments | **Indicator 8.1.4.1:** All new developments have basic water, sanitation, roads and energy infrastructure and services |
| **NDP Chapter 9: Improving Education, Training and Innovation** | | |
| **Outcome 1**: Improving | **Sub-outcome 1.2:** improved quality of teaching and learning through provision of adequate, quality | **Indicator 1.2.2.1.** Percentage of schools with adequate infrastructure in line with agreed norms and standards |

| MTSF Outcome | Sub-Outcome | Water and Sanitation-related Indicators |
|---|---|---|
| Education, Training and Innovation | infrastructure and Learning and Teaching Support Materials (LTSM) | |
| **Outcome 5:** A skilled and capable workforce to support an inclusive growth path | **Sub-Outcome 5.2:** Increase access and success in programmes leading to intermediate and high level learning | **Indicator 5.2.2.2:** Costed macro infrastructure maintenance plan for TVET colleges developed |
| | **Sub-Outcome 3:** Increase access to high-level occupationally directed programmes in needed areas | **Indicator 5.3.1.1:** Macro infrastructure plan for the university sector developed |
| | | **Indicator 5.3.2.:** Number of research infrastructure grants awarded |
| **NDP Chapter 10: Improving Health** | | |
| **Outcome 2:** A long and health life for all South Africans | **Sub-outcome 7:** Improved health facility planning and infrastructure delivery relates to water supply and sanitation in the health sector | **Indicator 2.7.1.1:** Percentage of facilities that comply with gazette infrastructure Norms & Standards |
| | | **Indicator 2.7.3.1:** Number of health facilities that have undergone major and minor refurbishment |
| | | **Indicator 2.7.4.1:** Number of Provincial Departments of Health that have established Service Level Agreements (SLAs) with Departments of Public Works |
| **NDP Chapter 11: Social Protection** | | |
| **Outcome 13:** An inclusive and responsive social protection system | **Sub-Outcome 13.1:** social welfare delivery through legislative, policy reforms; capacity building | **Indicator 13.1.1.1:** Approved White Paper on Social Welfare Services |
| | | **Indicator 13.1.2.2:** Norms and standards approved by all nine provinces and published |
| | | **Indicator 13.1.3.1:** An effective service partnership model between state, private and community sector |
| | | **Indicator 13.1.3.2:** Institutionalized oversight capacity for monitoring of quality standards |
| | | **Indicator 13.1.4.1:** Demand Model developed for social service professionals |
| | | **Indicator 13.1.7.1:** Policy on use of HBC and other community based workers |
| | | **Indicator 13.1.8.1:** A resourcing strategy for social development services |
| **NDP Chapter 13: Building a capable and developmental State** | | |
| **MTSF Outcome 9:** A responsive, accountable, effective and efficient local government system | **Sub-Outcome 9.1:** Members of society have sustainable and reliable access to basic services | **Indicator 9.1.3.1:** Development Planning Strategy to guide sector department's support to municipalities developed. |
| | | **Indicator 9.1.3.i:** Development Planning Strategy implemented and monitored. . |
| | | **Indicator 9.1.3. ii**<br>Number of SDBIPs monitored and tracked |
| | | **Indicator 9.1.3.1:** – Number of SMIPs developed in consultation with Provinces, municipalities and sector departments.<br>– SMIPs approved by Premiers and MEC. |
| | | **Indicator 9.1.3.2:** Terms of Reference for National Municipal Capacity Coordination and Monitoring Committee (NMCCMC) reviewed to ensure joint decision-making on support and intervention. |
| | | **Indicator 9.1.4.1:** Number of municipalities in the 27 priority districts supported to apply mechanisms to provide FBS to indigent households. |
| | | **Indicator 9.1.4.2:** Standardised indigent register for provision of free basic services developed |
| | | **Indicator 9.1..5.1:** Free Basic Services Programme evaluated |

| MTSF Outcome | Sub-Outcome | Water and Sanitation-related Indicators |
|---|---|---|
| | | **Indicator 9.1.5.2:** Recommendations of Free Basic Services Programme evaluation implemented. |
| | | **Indicator 9.1..5.3:** Implementation of recommendations on Free Basic Services monitored |
| **NDP Chapter 15: Transforming society and uniting the country** | | |
| **MTSF Outcome 14:** Nation Building and Social Cohesion | **Sub-Outcome 14.1:** Fostering Constitutional values | **Indicator 14.1.5.1:** % of persons in vulnerable and marginalised groups aware of the Constitution. |
| | **Sub-outcome 14.2:** Equal opportunities, inclusion and redress | **Indicator 14.2.6.1:** Municipalities demonstrating gender/poor responsive budgeting |
| | | **Indicator 14.2.6.2:** Demonstrable inclusion of the poor in municipal processes |
| | **Sub-outcome 14.4:** Promoting Active Citizenry and Leadership | **Indicator 14.4.1a.1:** An interactive municipal specific two way communication mechanism established |
| | | **Indicator 14.4.5.1:** Number of Citizen based monitoring programmes/department for departments delivering services directly to the public |

The DWS, in **2014**, added to the country's incentive-based performance management systems with the introduction of the No Drop Performance System, with the purpose to provide an overview of municipal water losses, non-revenue water and water use efficiency (DWS, 2014b). The No Drop performance assessment was conducted under the Blue Drop Criteria 6 – Water Use Efficiency and Water Loss Management. Three sub-criteria, water balance, WDM Strategy and Compliance and Performance were added to this BD Criteria (Figure 29). Performance was assessed against three criteria, namely the ability of the WSA to compile and submit data for a water balance, the availability of a Water Demand Management Strategy and evidence of implementation of the strategy and the level of compliance and performance of the WSA related to losses for various water use sectors.

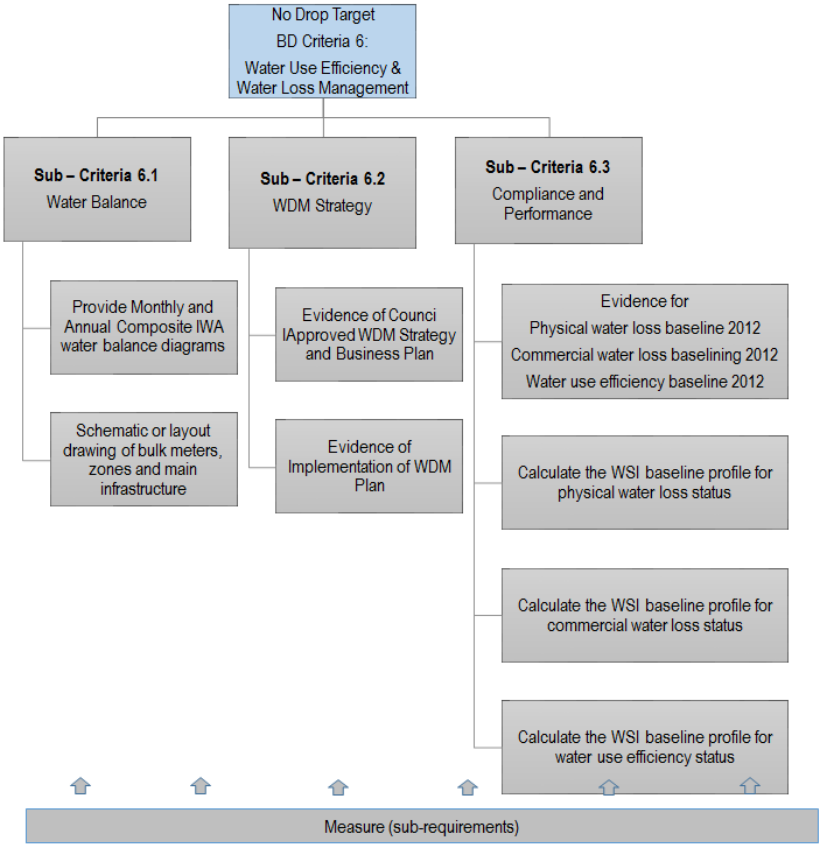


Figure 29: No Drop Criteria, sub-criteria and indicators (DWS, 2014b)

It was important to note that all the above monitoring and reporting targets had a strong focus on *functional water and sanitation services.* Assessment of these targets required the monitoring of not only the percent of individuals having access to an improved water supply and sanitation (as defined in the SFWS and NWPR) but also monitoring of the functionality of these services. Functionality of the water supply was largely part of the definition of an improved basic water supply, namely continuity of supply was defined as *the sustainable operation of the facility (available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident)* (DWAF, 2003). This aspect of household water supply had already been assessed in the GHS from 2009 to 2015, however the indicators was not yet tracked or reported in any of the national water supply monitoring systems. Figure 30 showed that between 2009 and 2015 slightly more households had reported an interruption to

their water supply in the past 12 months, increasing from 42,1% of households in 2009 to 43% of households in 2015. At the same time, more households (52,8%) in 2015 reported that they had had an interruption for more than 48 hours (compared to 48,9% in 2009). Similarly, Figure 30 showed that an increase percent of households (38,4%) reported more than 15 days of water interruption in the previous 12 months (compared to 33,5% of households in 2009). This indicated that an increasing percent of households did not have access to a water supply which meets functional requirements (as per the policy). South Africa had only recently (2013) started reporting in the GHS the problems which are experience with sanitation systems.

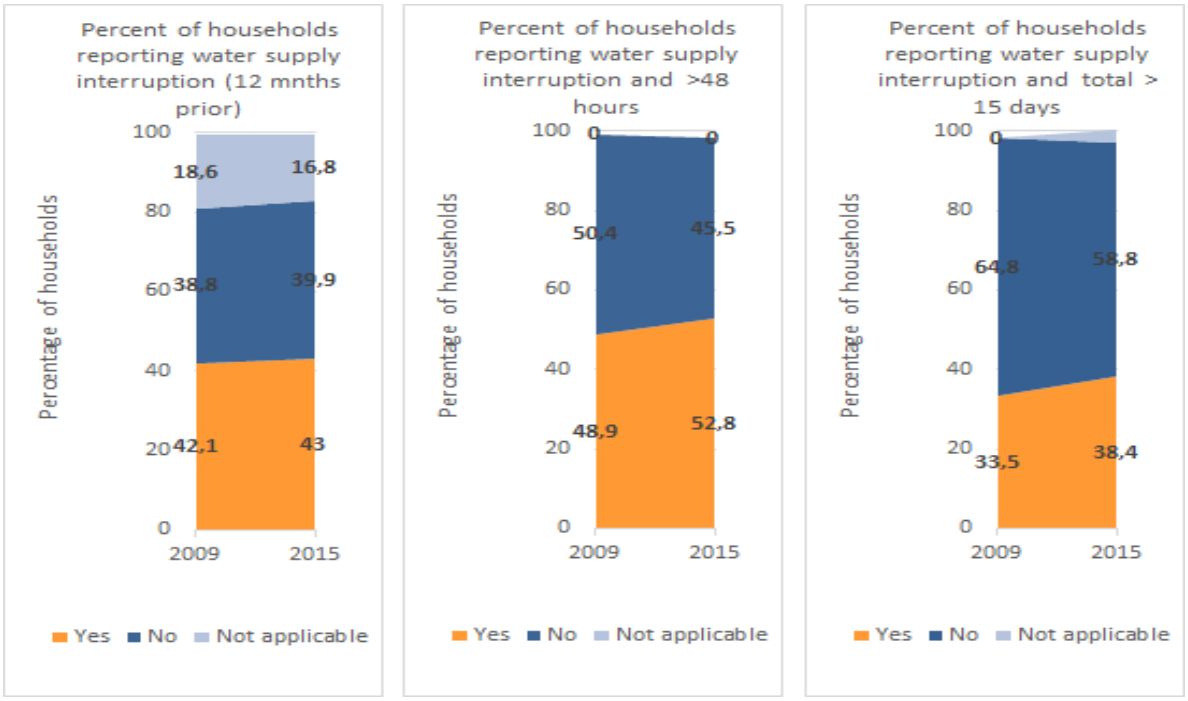


Figure 30: Water supply interruptions and duration reported in the GHS of 2009 and 2015 (source: StatsSA, 2009 and 2015a)

South Africa, in **2014**, again conducted a self-assessment of the GLAAS indicators to report on key WASH characteristics in the country. The 2014 report presented data from 94 countries, covering all MDG regions. It also includes data from 23 external support agencies (ESAs), representing over 90% of official development assistance (ODA) for sanitation and drinking-water (UN-Water and WHO, 2014). The indicators included in the 2014 GLAAS, shown in Table 12, addressed water and sanitation categories of policy, monitoring, finance and external support.

Table 12: GLAAS indicators and global results reported in the 2014 report (UN-Water and WHO, 2014)

| CATEGORY | INDICATOR | GLOBAL RESULTS |
|---|---|---|
| CONTEXT | People lacking basic sanitation (JMP 2014) | 2,5 billion |
| | Proportion of world population practising open defecation (JMP 2014) | 1 out of 7 |
| NATIONAL PLANNING AND COORDINATION | Percentage of countries reporting they have plans that are costed, funded, implemented and regularly reviewed for *drinking-water / sanitation / hygiene* | 29% / 23% / 20% |
| | Countries with a human resource strategy in sanitation, drinking-water and hygiene (covering urban and rural areas) | One third |

| CATEGORY | INDICATOR | GLOBAL RESULTS |
|---|---|---|
| | Percentage of countries recognizing *water / sanitation* as a human right by law | 74% / 67% |
| | Percentage of countries with: a WASH policy which explicitly includes populations living in poverty / a monitoring system that tracks progress for populations living in poverty | 79% / 41% |
| MONITORING AND USE OF PERFORMANCE INDICATORS | Percentage of countries reporting to have undertaken a national assessment for water/sanitation (e.g. Joint Sector Review) since 2012 | Approx. 50% |
| | Percentage of countries with formal service providers that report to regulatory authority and use results of their internal monitoring to trigger a corrective action for *urban / rural* drinking-water | >60% / <50% |
| | Percentage of countries reporting independent surveillance of *urban / rural* drinking-water quality against national standards | Approx. 70% / Approx. 40% |
| | Percentage of countries reporting use of indicators to track expenditure against established baseline data for sanitation / drinking-water | 31% / 45% |
| | Percentage of countries reporting to track functionality against established baseline data for sanitation / drinking-water | 21% / 30% |
| NATIONAL FINANCING | Percentage of countries able to provide detailed WASH expenditure | 35% |
| | Percentage of countries reporting insufficient financing | 80% |
| | Average percentage of WASH financing derived from households | 73% |
| | Breakdown between drinking-water and sanitation country expenditure | 57% / 43% |
| | Breakdown between urban and rural country expenditure | 82% / 18% |
| | Average expenditure on hygiene promotion (as % of total WASH) | <1% |
| | Percentage of countries with domestic / external absorption rates greater than 75% | >50% / >35% |
| | Percentage of countries with less than 80% cost recovery for O&M | >70% |
| | Percentage of countries indicating that affordability schemes exist | >60% |
| EXTERNAL SUPPORT | Official development assistance commitments for water and sanitation | US$ 10.9 billion |
| | Percentage of total ODA commitments for water and sanitation | 6,1% |
| | Official development assistance disbursements for water and sanitation | US$ 6.7 billion |
| | Breakdown between drinking-water and sanitation aid commitments | 73% / 27% |
| | Proportion of aid commitments directed to basic services | 21% |
| | Breakdown between urban and rural external aid disbursement | 73% / 27% |
| | Average proportion of external financing allocated for new services | 45% |
| | Breakdown between concessional ODA loans and ODA grants | 59% / 41% |

The South African results for the 2014 GLAAS indicators are shown in Table 13, showing that the country had made progress in the governance indicators, with gaps in the reporting of indicators in the monitoring, human resources and financial categories. The reporting of human resources indicators was particularly sparse for the South African GLAAS report.

**Table 13: Results for the South African reporting of GLAAS indicator in 2014 (taken from UN-Water and WHO, 2014)**

| | Indicator | | Result |
|---|---|---|---|
| Governance | Use of improved sanitation facility (%) | | 74 % |
| | Use of improved drinking-water source (%) | | 95% |
| | Human right to water and sanitation recognised in legislation | Water | √ |
| | | Sanitation | √ |
| | Status of natural policy development and implementation | Urban Sanitation | ≤ |
| | | Rural Sanitation | ≤ |
| | | Urban drinking water | ≤ |
| | | Rural drinking water | ≤ |
| | | Hygiene promotion | |
| | Coverage targets (% of population and target date) | Urban sanitation | 100% |
| | | Rural sanitation | 100% |
| | | Urban drinking water | 100% by 2014 |

| | Indicator | | Result |
|---|---|---|---|
| | | Rural drinking water | 100% by 2014 |
| | Universal access policy for disadvantage groups | Poor population | ≥ |
| | | Population living in slums in informal settlements | ≥ |
| | | Population in remote or hard to reach areas | ≥ |
| | Coordination between WASH actors | | ≥ |
| Monitoring | Date of latest national assessment (e.g. Joint Sector Review) | Sanitation | 2012 |
| | | Water | 2011 |
| | Drinking-water quality surveillance | Urban testing of water quality against national standards | X |
| | | Rural testing of water quality against national standards | X |
| | | Urban auditing against recommended management procedures | X |
| | | Rural auditing against recommended management procedures | X |
| | Data available for decision-making for resource allocation | Sanitation | √ |
| | | Drinking water | √ |
| | Tracing progress among disadvantage groups | Sanitation in poor population | X |
| | | Sanitation in population living in slums or informal settlements | X |
| | | Sanitation in population in remote or hard to reach areas | X |
| | | Drinking water in poor population | X |
| | | Drinking water in population living in slums or informal settlements | X |
| | | Drinking water in population in remote or hard to reach areas | X |
| | Use of performance indicator to track progress | Sanitation expenditure | ↑ |
| | | Functionality of sanitation system | ↑ |
| | | Sanitation affordability | ↓ |
| | | Expenditure on drinking water | ↑ |
| | | Functionality of water systems | ↑ |
| | | Affordability of drinking water | → |
| Human Resources | Existence of an overall strategy to develop and manage human resources | Urban sanitation | X |
| | | Rural sanitation | X |
| | | Urban drinking water | X |
| | | Rural drinking water | X |
| | | Urban hygiene | X |
| | | Rural hygiene | X |
| | Human resource strategy outlines actions to fill identified gaps | Urban sanitation | |
| | | Rural sanitation | |
| | | Urban drinking water | |
| | | Rural drinking water | |
| | | Urban hygiene | |
| | | Rural hygiene | |
| | Extent which the following factors constrain WASH human resource capacity | Financial resources available for staff (sanitation) | # |
| | | Lack of skilled graduates (sanitation) | # |
| | | Skilled workers do not want to live/work in rural areas (sanitation) | # |
| | | Financial resources available for staff (drinking water) | $ |
| | | Lack of skilled graduates (drinking water) | # |
| | | Skilled workers do not want to live/work in rural areas (drinking water) | # |
| | | Financial resources available for staff (hygiene) | |
| | | Lack of skilled graduates (hygiene) | |
| | | Skilled workers do not want to live/work in rural areas (hygiene) | |
| Fina ncin | Existence and level of implementation of a government defined plan/budget for the WASH | Urban sanitation | ☒ |
| | | Rural sanitation | ☒ |
| | | Urban drinking water | Δ |

| | Indicator | | Result |
|---|---|---|---|
| | sector which is published and agreed | Rural drinking water | ☒ |
| | | Urban hygiene | |
| | | Rural hygiene | |
| | Financing plan defines if operating and basic maintenance is to be covered by tariffs or household contributions | Urban sanitation | |
| | | Rural sanitation | |
| | | Urban drinking water | |
| | | Rural drinking water | |
| | Financial schemes exist to make WASH more affordable for disadvantaged groups | Sanitation | ♦ |
| | | Water | ♦ |
| | Absorption of external funds (% of official donor capital commitments utilized (three-year average) | Urban sanitation | |
| | | Rural sanitation | |
| | | Urban drinking water | |
| | | Rural drinking water | |

√ Yes
X No/ not done/ insufficiently performed
≥ Policy approved plan being fully implemented with funding and regulatory relevant
≤ policy approved, plan not being fully implemented
↑ agreed and tracked against baseline data
→ agreed but not tracked against baseline data
↓ none or under development
# Severe constraint
$ Moderate constraints
Δ Agreed and consistently followed
☒ Agreed but not sufficiently implemented
♦ Schemes exist and widely used

By **2015**, the end of this MDG era, the Update and MDG Assessment Report showed that South Africa had address the water supply MDGs and had made moderate progress with the sanitation MDG. Access of the South African population to improved water supply had improved to 93 % of the population in 2015, from 83% in 1990 (UNICEF and World Health Organization 2015) (Figure 31). Figure 31 showed that there were also disparities in access to improved water supply in 2015, with rural areas demonstrating much lower (81%) access to improved water supply when compared to 98% of urban households.

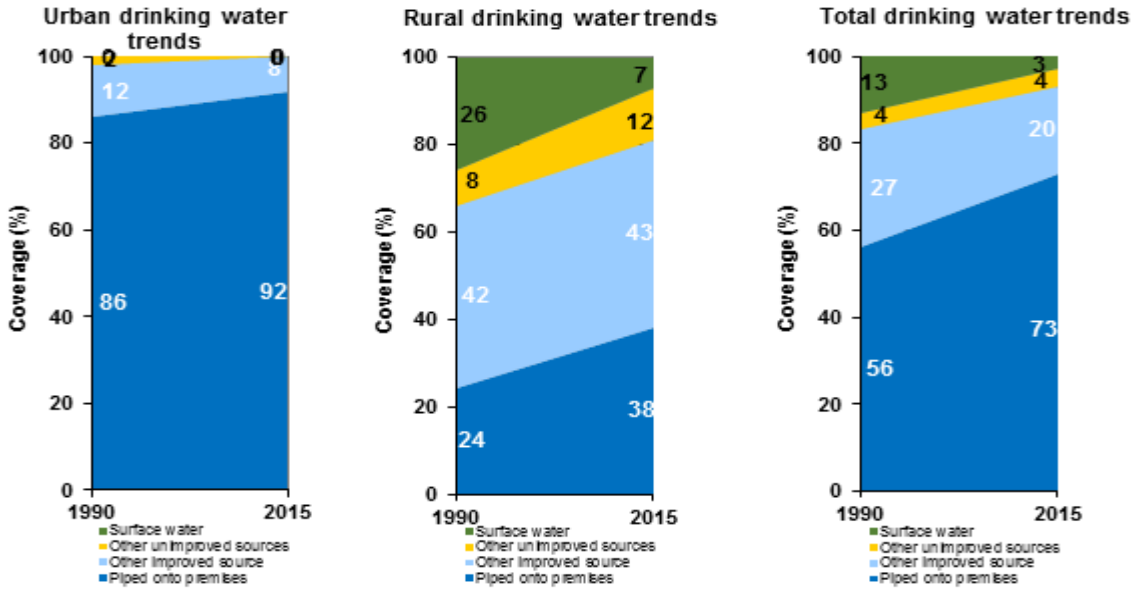


Figure 31: Progress with the water supply MDG in South Africa from 1990 to 2015 (taken from UNICEF and World Health Organization, 2015)

For the moderate progress[8] in addressing the sanitation MDG, the proportion of the 2015 population that gained access to sanitation since 1990 was 31% (UNICEF and World Health Organization 2015). The Update and MDG Assessment Report indicated that to halve the proportion of the population without sanitation services the backlog would have needed to reduce to 24% of households in 2015 and a total coverage of 76% of households (Figure 32) (UNICEF and World Health Organization, 2015). Figure 32 showed that access to improved sanitation had improved significantly from 51% in 1990 to 68% of the population in 2015. This however did not meet the MDG target. There are also disparities in access to improved sanitation in the urban and rural areas. The coverage of these services in the rural areas was much lower (61%) when compared to 71% of urban households, demonstrating inequity in provision of the services based on the locality of a household.

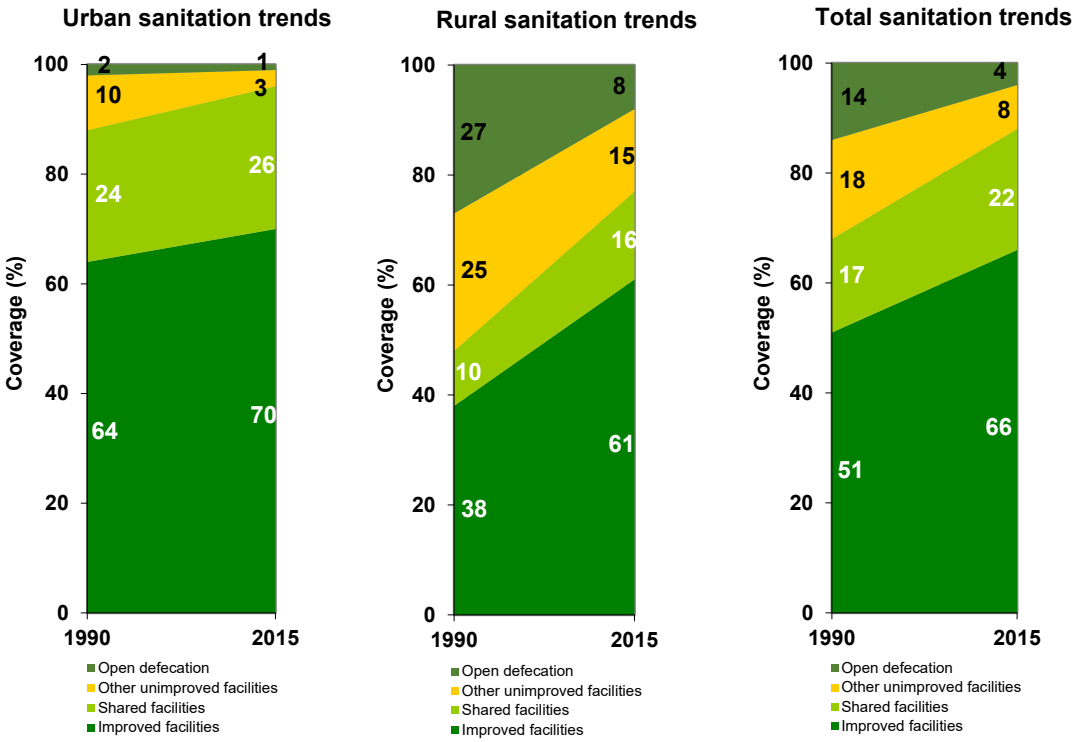


Figure 32: South Africa's progress with the MDGs related to ensuring access to improved sanitation (taken from UNICEF and World Health Organization, 2015)

Safe and sufficient drinking-water, along with adequate sanitation and hygiene had implications across all Millennium Development Goals (MDGs) – from eradicating poverty and hunger, reducing child mortality, improving maternal health, combating infectious diseases, to ensuring environmental sustainability (WHO and UNICEF, 2014). Internationally, much progress was achieved with the MDG, with:

[8] Moderate progress was if change in coverage between 1990 and 2015 was 1/3 to 2/3 of target

- 2.3 billion people gaining access to improved drinking-water between 1990 and 2012 (WHO and UNICEF, 2014).
- The number of children dying from diarrhoeal diseases, steadily fell over the two last decades from approximately 1.5million deaths in 1990 to just above 600 000 in 2012 (WHO and UNICEF, 2014).

However, like the South African data, the MDG sanitation target still showed the slowest progress, with 2.5 billion people without improved sanitation and 1.1 billion people still practicing open defecation at the end of this era.

### 2.2.9 Summary of the Review of the Current South African WASH Monitoring and Reporting Capability

A review of South Africa's water supply, sanitation and hygiene services monitoring and reporting capability, namely indicators currently being monitored and reported for the WASH sector of the country, showed that the country was already monitoring and reporting a number of water supply and sanitation indicators (Table 14-15 below). The indicators which were being monitored and reported in the country were categorised by "type". Since the focus of the SDG indicators was on monitoring and reporting outcome indicators, it was necessary to determine South Africa's capability to monitor and report WASH outcome indicators in the country. The types of indicators were categorised as:

a) **Input indicators:** Measure inputs of resources (usually human and financial) to a particular intervention. For example budget allocation to provision of WASH services;
b) **Process indicators:** Measure the manner in which interventions services and goods are provided. For example, incident management plan in place; maintenance plan in place.
c) **Output indicators**: Measure the short-term quantity of goods and services produced and the efficiency of production of the intervention. For example number of job opportunities per Rand spend; number of people trained in hygiene; number of toilets and water outlets constructed;
d) **Outcome indicators:** Measure the broader, medium-term results achieved by an intervention. For example, number of people with access to a safely management drinking water service; number of people with access to adequate sanitation services; and
e) **Impact indicators:** Measure the long-term desired impact which an intervention wishes to achieve. For example, decrease in incidence of diarrhoea.

Water supply indicator address a number of components of water supply, including indicators of access to safely managed water supply services in education facilities, health facilities and households, indicators of equity in water services, indicators of water quality and indicators of affordability.

Table 14: Summary of water supply indicators currently monitoring and reported in South Africa

| SDG target | Focus | Goal/Outcome | Indicator | Source | Type of Indicator |
|---|---|---|---|---|---|
| SDG Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all | Water supply – education | **Sub-outcome 1.2:** improved quality of teaching and learning through provision of adequate, quality infrastructure and Learning and Teaching Support Materials (LTSM | **Indicator 1.2.2.1.** Percentage of schools with adequate infrastructure in line with agreed norms and standards | **MTSF Outcome 1:** Improved quality of basic education | Outcome |
| | | **Sub-Outcome 5. 2:** Increase access and success in programmes leading to intermediate and high level learning | **Indicator 5.2.2.2** Costed macro infrastructure maintenance plan for TVET colleges developed | **MTSF Outcome 5:** A skilled and capable workforce to support an inclusive growth path | Output |
| | | **Sub-Outcome 5.3:** Increase access to high-level occupationally directed programmes in needed areas | **Indicator 5.3.1.1** Macro infrastructure plan for the university sector developed | | Output |
| | | | **Indicator 5.3.2.1** Number of research infrastructure grants awarded | | Output |
| | | **Outcome 1:** Delivery Agreement | Indicator 24.1: The percentage of schools which comply with nationally determined *minimum* physical infrastructure standards. | **Outcome 1:** Delivery Agreement | Outcome |
| | | | Indicator 24.2: The percentage of schools which comply with nationally determined *optimum* physical infrastructure standards. | | Outcome |
| | Water supply – health facilities | **Sub-outcome 2.7:** Improved health facility planning and infrastructure delivery | **Indicator 2.7.1.1.** Percentage of facilities that comply with gazette infrastructure Norms & Standards | **MTSF Outcome 2:** A long and healthy life for all South Africans | Outcome |
| | | | **Indicator 2.7.3.1** Number of health facilities that have undergone major and minor refurbishment | | Outcome |
| | | | **Indicator 2.7.4.1** Number of Provincial Departments of Health that have established Service Level Agreements (SLAs) with Departments of Public Works | | Output |
| | Water supply – bulk | **Sub-Outcome 6.4:** Maintenance and supply availability of our bulk water resources ensured | **Indicator 6.4.1.1** Mzimvubu Water Project<br>1. TCTA to finalise the funding strategy<br>2. DWS to direct TCTA to implement the scheme with Eskom to implement the hydro power project, | **MTSF Outcome 6:** An efficient, competitive and responsive economic infrastructure network | Process |
| | | | **Indicator 6.4.2.1** Vaal-Gamagara Bulk Water Supply Scheme – DWS/Sedibeng Water to commence with the upgrading of the Vaal-Gamagara Bulk Water Supply Scheme when funding is secured. TCTA to facilitate with contractual project finance model | | Process |
| | | | **Indicator 6.4.2.2 C**lanwilliam Dam Project – DWS to expand the yield capacity of the Clanwilliam Dam by increasing the | | Output |

| SDG target | Focus | Goal/Outcome | Indicator | Source | Type of Indicator |
|---|---|---|---|---|---|
| | | | height of the wall by 13 meters thereby increasing the yield by an additional 70 million cubic meters of water per annum. | | |
| | | | **Indicator 6.4.3.1** Mooi-Mgeni Transfer Scheme – TCTA | | Output |
| | | | **Indicator 6.4.3.2** Current project: Acid Mine Drainage: TCTA to complete the short term solution and DWS to make available funds for the Western and Eastern Basins. Rand Water to complete the long term solution | | Input/Output |
| | | | **Indicator 6.4.4.8** Additional water supplies for Lephalale area: Mokolo and Crocodile River (West) Augmentation Project phase 1 | | Output |
| | | | **Indicator 6.4.5.1** Lesotho Highlands Phase 2 – on-budget and schedule delivery of 470 million m3 per annum | | Outcome |
| | **Water supply - households** | **Sub-outcome 8.1:** Adequate housing and improved quality living environments | **Indicator 8.1.4.1** All new developments have basic water, sanitation, roads and energy infrastructure and services | **MTSF Outcome 8: Sustainable** Human Settlements and Improved Quality of Household Life | Outcome |
| | | **KPA 3:** Service Delivery and Backlogs | **Indicator 3.1.** Access to water | **Municipal Benchmarking Initiative** | Outcome |
| | | | **Indicator 3.3.** Water services vulnerability index | | Output |
| | | | **Indicator 3.4.** Water services planning health check | | Output |
| | | **Component 3:** Reducing Human Vulnerability **Indicator 12:** Basic Human Sustenance | **Indicator 25.** Access to water | State of the Environment Reporting | Outcome |
| | **Water supply - quality** | **Criteria 1:** Risk Management | **Indicator 1.1** Water Safety Planning Process | **Blue Drop System** | Process |
| | | | **Indicator 1.2** Risk Assessment and Review of Control Measures | | Process |
| | | | **Indicator 1.3** Risk-Based Monitoring Programmes | | Process |
| | | | **Indicator 1.4** Credibility, Traceability & Submission of Drinking Water Quality Data | | Process |
| | | | **Indicator 1.15** Incident Management | | Process |
| | | **Criteria 2:** Drinking Water Quality Process Management & Control | **Indicator 2.1** Compliance with Regulation – Works Classification | | Output |
| | | | **Indicator 2.2** Compliance with Regulation – Process Controller Registration | | Output |
| | | | **Indicator 2.3** Availability & Competence of Maintenance Team | | Process |
| | | | **Indicator 2.4** Availability of Water Works Logbook | | Process |
| | | **Criteria 3:** Drinking Water Quality Compliance | **Indicator 3.1** Compliance per Determinand (according to Monitoring Programme) | | Outcome |

| SDG target | Focus | Goal/Outcome | Indicator | Source | Type of Indicator |
|---|---|---|---|---|---|
| | | | **Indicator 3.2** Risk Assessment Defined Health Index | | Outcome |
| | | | **Indicator 3.3** Operational Efficiency Index | | Process |
| | | **KPA 5:** Product Quality | **Indicator 5.1.** Drinking water compliance (E.coli/Faecal coliform) | **Municipal Benchmarking Initiative** | Outcome |
| | | | **Indicator 5.2.** Drinking water quality health check | | Outcome |
| | **Water supply - equity** | **Sub-Outcome 7.5:** Increased access to quality basic infrastructure and services, particularly in education, healthcare and public transport in rural areas | **Indicator 7.5.1.1** Number of school infrastructure projects being implemented | **MTSF Outcome 7:** Vibrant, equitable and sustainable rural communities with food security for all | Output |
| | | | **Indicator 7.5.1.2** Number of education infrastructure projects completed | | Output |
| | | | **Indicator 7.5.1.3** Number of education infrastructure projects being implemented | | Output |
| | | | **Indicator 7.5.2.1** Number of health infrastructure projects completed | | Output |
| | | | Indicator 7.5.2.2 Number of health infrastructure projects being implemented | | Output |
| | | | Indicator 7.5.4.1. Number of rural households with access to safe drinking water (in the house, yard and 200 m from the house | | Outcome |
| | **Water supply - affordability** | **Sub-Outcome 9.1** Members of society have sustainable and reliable access to basic services | **Indicator 9.1..4.1** Number of municipalities in the 27 priority districts supported to apply mechanisms to provide FBS to indigent households. | **MTSF Outcome 9:** Responsive, accountable, effective and efficient developmental local government system | Process |
| | | | **Indicator 9.1..4.2** Standardised indigent register for provision of free basic services developed | | Output |
| | | | **Indicator 9.1..5.1** Free Basic Services Programme evaluated | | Output |
| | | | **Indicator 9.1..5.2** Recommendations of Free Basic Services Programme evaluation implemented. | | Output |
| | | | **Indicator 9.1..5.3** Implementation of recommendations on Free Basic Services monitored. | | Output |

It is clear from the water supply indicators utilised in South Africa that there were overlaps in indicators, that indicators were repeated by various reporting systems and that indicators were a mix of input, output and outcome indicators. For example, water supply indicators in the MTSF Outcomes, which should in fact be outcome indicators, included input/output indicators such as *Indicator 6.4.1.1 Mzimvubu Water Project: TCTA to finalise the funding strategy and DWS to direct TCTA to implement the scheme with Eskom to implement the hydro power project* and outcome indicators such as *Indicator 8.1.4.1: All new developments have basic water, sanitation, roads and energy infrastructure and services*

Many of the current water supply and sanitation indicators do not also meet the based requirements of a SMART indicators (See Section 6.2.2.).

The review of current water supply indicators in South Africa, shown in Table 14, clearly indicated that:-

4. Outcome indicators were available to monitor and report universal access to water supply in households, schools, health facilities;
5. Outcome indicators were available to monitor and report universal access to water supply in rural areas;
6. Outcome indicators were available to monitor and report the safely managed component of water supply;
7. A large number of input/process/output indicators were available for monitoring and reporting progress with water supply in South Africa

The review of current sanitation indicators in South Africa, shown in Table 15, clearly indicate that:-

1. Outcome indicators were available of ambient water quality, wastewater quality and acid mine non-compliance to licenses;
2. A large number of structural indicators were available for monitoring and reporting progress with wastewater management – indirect indicator of wastewater quality

Table 15: Component interpretation of SDG target 6.2 and South African indicators which could potentially be used to report progress towards the target (taken from UN-Water 2016)

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| By 2030, achieve access | Implies facilities close to home that can be easily reached and used when needed | Sanitation available – education | Y | • **Indicator 1.2.2.1.** Percentage of schools with adequate infrastructure in line with agreed norms and standards<br>• **Indicator 24.1:** The percentage of schools which comply with nationally determined *minimum* physical infrastructure standards<br>• **Indicator 24.2:** The percentage of schools which comply with nationally determined *optimum* physical infrastructure standards | Outcome | MTSF Outcome 1<br>Outcome 1: Delivery agreement |
| | | | Y | **Indicator 5.2.2.2**<br>Costed macro infrastructure maintenance plan for TVET colleges developed | Structural | **MTSF Outcome 5:** A skilled and capable workforce to support an inclusive growth path |
| | | | Y | **Action 5.3.1.1**<br>Macro infrastructure plan for the university sector developed | Structural | |
| | | | Y | **Action 5.3.2.1**<br>Number of research infrastructure grants awarded | Structural | |
| | | Sanitation available – household | Y | **Indicator 8.1.4.1**<br>All new developments have basic water, sanitation, roads and energy infrastructure and services | Outcome | **MTSF Outcome 8: Sustainable** Human Settlements and Improved Quality of Household Life |
| | | | Y | **Indicator 3.2.** Access to sanitation | Outcome | **Municipal Benchmarking Initiative** |
| | | | Y | **Indicator 3.3.** Water services vulnerability index | Structural | |
| | | | Y | **Indicator 3.4.** Water services planning health check | | |
| | | | Y | **Indicator 24.** Households with access to sanitation | Outcome | State of the Environment Reporting |

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| | | | Y | Number or percentage of households with access to a functional service at acceptable levels as per norms and standards – measured as:<br>• % households in formal areas with a bucket sanitation service<br>• Number or percentage of households with access to a functional sanitation service at acceptable levels as per norms and standards | Outcome | **MTSF Outcome 9:** Responsive, accountable, effective and efficient developmental local government system |
| | | Sanitation available – health facilities | Y | **Indicator 2.7.1.1.** Percentage of facilities that comply with gazette infrastructure Norms & Standards | Outcome | **MTSF Outcome 2:** A long and healthy life for all South Africans |
| | | | | **Indicator 2.7.3.1** Number of health facilities that have undergone major and minor refurbishment | Outcome | |
| | | | | **Indicator 2.7.4.1** Number of Provincial Departments of Health that have established Service Level Agreements (SLAs) with Departments of Public Works | Structural | |
| | | Sanitation available – Public (workplace) access | N | Requires further investigation | Outcome | |
| | | Handwashing facility and soap – education | N | Requires further investigation | Outcome | |
| | | Handwashing facility and soap – health facilities | N | Requires further investigation | Outcome | |
| | | Handwashing facility and soap – households | N | Requires further investigation | Outcome | |
| | | Handwashing facility and soap – public spaces | N | Requires further investigation | Outcome | |

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| | | Sanitation – proximity | N – measure required | Linked to the above indicators. Access to a basic sanitation facilities requires<br>a) appropriate health and hygiene awareness and behaviour;<br>a) the lowest cost, appropriate system for disposing of human excreta,<br>b) household wastewater, greywater, which considers resource constraints, is acceptable and affordable to the users, safe including for children, hygienic and easily accessible and which does not have a detrimental impact on the environment;<br>c) a toilet and hand washing facility;<br>d) to ensure clean living environment at a household and community level; and<br>e) the consideration of defecation practices of small children and people with disabilities and special needs. | | |
| | | Sanitation – physical access | N – measure required | Indicator required as the current definition of basic sanitation service services require *the provision of a basic sanitation facility which is environmentally sustainable, **easily accessible to a household** and a consumer, the sustainable operation and maintenance of the facility, including the safe removal of human waste, greywater and wastewater from the premises where this is appropriate and necessary, and the communication and local monitoring of good sanitation, hygiene and related.* Measuring 'easily accessible to a households' needs to be defined and included in the indicators above | | |
| | | Sanitation – acceptable | N – measure required | Indicator required as the current definition of Access to a basic sanitation facilities requires that *household wastewater, **greywater**, which **considers resource constraints,** is **acceptable** and affordable to the users, safe including for children, hygienic and easily accessible and which does not have a detrimental impact on the environment;.* Measuring 'acceptable' needs to be defined and included in the indicators above | | |
| **To adequate** | Implies a system that hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site | Sanitation – effluent collected, transported and treatment safely | | | | |
| **And equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | Rural areas | N | Indicator 7.5.1.1<br>Number of school infrastructure projects being implemented | Structural | MTSF Outcome 7: Vibrant, equitable and |
| | | | | Indicator 7.5.1.2 | Structural | |

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| | | | | Number of education infrastructure projects completed | | sustainable rural communities with food security for all |
| | | | | Indicator 7.5.1.3<br>Number of education infrastructure projects being implemented | Structural | |
| | | | | Indicator 7.5.2.1<br>Number of health infrastructure projects completed | Structural | |
| | | | | Indicator 7.5.2.2<br>Number of health infrastructure projects being implemented | Structural | |
| | | | Y | **Indicator 7.5.6.1**<br>Number of rural house with access to sanitation services | Outcome | |
| | | | Y | **Indicator 7.5.6.2**<br>Number of buckets eradicated in formally established areas | Outcome | |
| | | Sanitation access – Indigent | N | Requires further investigation | Alone | |
| | | Sanitation access – Women | N | Requires further investigation | Alone | |
| | | Sanitation access – Aged (>65) | N | Requires further investigation | Alone | |
| | | Sanitation access – Disabled | N | Requires further investigation | Alone | |
| | | Sanitation – Affordability to Indigent | N | Indicator 9.1..4.1<br>Number of municipalities in the 27 priority districts supported to apply mechanisms to provide FBS to indigent households. | Structural | MTSF Outcome 9: Responsive, accountable, effective and efficient developmental local government system |
| | | | | Indicator 9.1..4.2<br>Standardised indigent register for provision of free basic services developed | Structural | |
| | | | | Indicator 9.1..5.1<br>Free Basic Services Programme evaluated | Structural | |
| | | | | Indicator 9.1..5.2 | Structural | |
| | | | | | | |

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| | | | | Recommendations of Free Basic Services Programme evaluation implemented. | | |
| | | | | Indicator 9.1..5.3<br>Implementation of recommendations on Free Basic Services monitored. | Structural | |
| | | | N | Access of FBW outcome indicator is required | Outcome | |
| | | Sanitation – Affordable tariffs | N | Affordable tariff outcome indicator is required | Outcome | |
| **Sanitation** | The provision of facilities and services for safe management and disposal of human urine and faeces | | | | | |
| **And hygiene** | The condition and practices that help maintain health and prevent spread of disease including handwashing, menstrual hygiene management and food hygiene | Hygiene – education | N | Requires further investigation | Outcome | |
| | | Hygiene – health facilities | N | Requires further investigation | Outcome | |
| | | Hygiene – households | N | Requires further investigation | Outcome | |
| | | Hygiene – public spaces | N | Requires further investigation | Outcome | |
| | | Handwashing | | | | |
| **For all** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | | | | | |
| **And end open defecation** | Excreta of adults and children are deposited (directly or after being covered by a layer of earth) in the bush, a field, a beach or any open area, discharged directly into water sources | Open defecation | N | Requires further investigation | Outcome | |
| **Paying special attention to** | Implies reducing the burden of water collection and enabling women and girls to manage | | | | | |

| Target Text | Normative interpretation | UN recommended Indicator | Does South Africa currently have an indicator | Name of indicator | Type of Indicator | Source of indicator |
|---|---|---|---|---|---|---|
| **the needs of women and girls** | sanitation and hygiene needs with dignity. . | | | | | |
| **And those in vulnerable situations** | Implies paying attention to specific drinking water, sanitation and hygiene (WASH) needs found in special cases including in refugee camps, detention centres, mass gatherings and pilgrimages | | | | | |

# 3 NEW CHALLENGES IN THE MONITORING AND REPORTING OF WATER SUPPLY AND SANITATION – FROM MDGS TO SDGS (2015)

Many countries, including South Africa, mainstreamed the Millennium Development Goals (MDGs) during the MDG ear (1990-2015) into national and sub-national development policy, plans and strategies, and implemented specific interventions to achieve the MDG targets (UNDP and World Bank, undated). Progress in achieving the MDGs targets was however varied, with many countries missing one or more of the MDG targets, i.e. South Africa did not achieve the sanitation target of the MDG (Figure 33). Figure 33 showed that global progress with achieving the water supply MDG Target 7.8 was much better than with the sanitation MDG Target 7.9, with 67% of countries achieving the water target while only 36% of countries achieved the sanitation target. More than half (58%) of countries were "seriously off" achieving the sanitation MDG target.

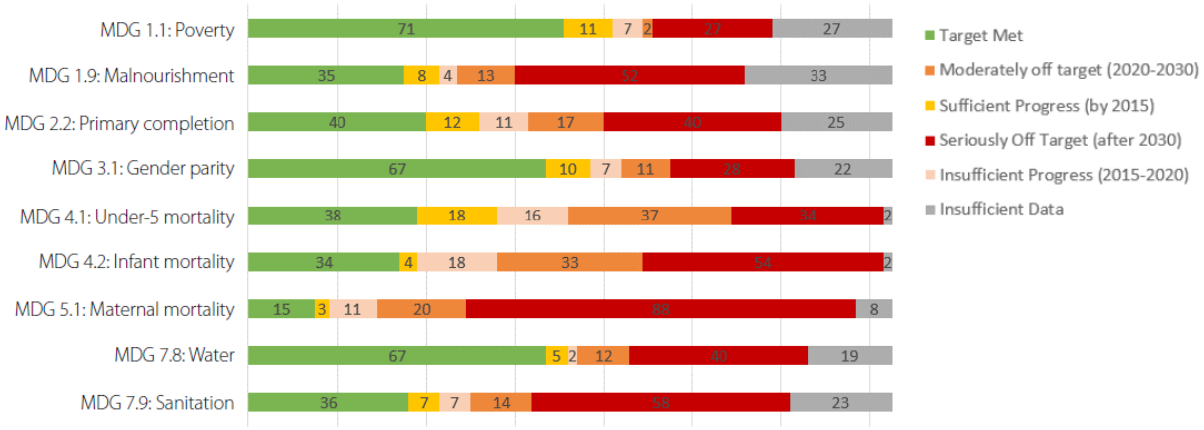


**Figure 33: Progress with some of the MDG by 2015, including the water and sanitation MDG targets, across the various countries which were perusing the targets (taken from UNDP and World Bank, undated).**

Progress towards the MDGs also variety across regions and along two key dimensions: the rural-urban divide and demographic features (UNDP and World Bank, undated). For example, the East Asia and Pacific regions were estimated to have met all of the MDGs, while sub-Saharan Africa was off target on most of the goals (UNDP and World Bank, undated). City dwellers saw much more progress with the MDG targets as compared to individuals living in the rural areas (UNDP and World Bank, undated).

Evidence from a number of assessments suggested that the MDGs drove local progress in at least four ways (UNDP, 2016):

- Persuading and empowering decision makers to pursue progressive policies;
- Making local challenges more visible;
- Enabling stakeholders to hold leaders accountable; and
- Motivating greater coordination and coherence.

Key lessons which had emerged from the implementation and monitoring of progress with the MDGs and which could inform and guide the future developmental goals included those shown in Figure 34 (taken from UNDP, 2016):


Figure 34: Key recommendations from the MDGs for implementation of the SDGs (taken from UNDP, 2016)

The MDGs demonstrated that with enough political will and investment, a number of countries could further benefit from proven MDG initiatives. It was however necessary to ensure that all countries were included and committed to future development agendas ("leaving *no one* behind") and that stepped up, early action was needed to meet the goals and targets of any developmental future agenda (UNDP, 2016).

Experience with the prescriptive nature of the targets of the MDGs suggested that in setting future development goals and target, all countries rather establish their own targets which would reflect their particular context and priorities, stretching national ambitions to achieve the globally agreed commitments (UNDP, 2016). These national targets must be selected and agreed through an inclusive national process of public participation and campaigns (UNDP, 2016). This process of national setting of future development goals and targets would provide an opportunity to reach broad consensus on locally relevant developmental challenges which should be monitored and prioritized in future.

Once there was consensus on country-specific developmental goals and targets, subnational-level strategies could be utilised to enable and motivate local and central government action to achieve agreed international development goals. Subnational developmental strategies would need to inform and reflect national strategies and budgets. A "nesting" approach taken with the MDGS was recommended, where select global and national targets were incorporated within national and subnational strategies (Figure 35) (UNDP, 2016). Using the 'nesting' approach to development goals and targets, countries would need to plan ahead, agree on a development vision for the future, and work backwards to avoid risks and identify the reforms needed to set transformative change in motion (UNDP, 2016). Prioritization of targets, as outlined in Figure 35, did not mean that certain global development goals and

targets were bypassed, but rather the identifying of specific development areas that could serve as an entry point for the transformational change in national development demands.

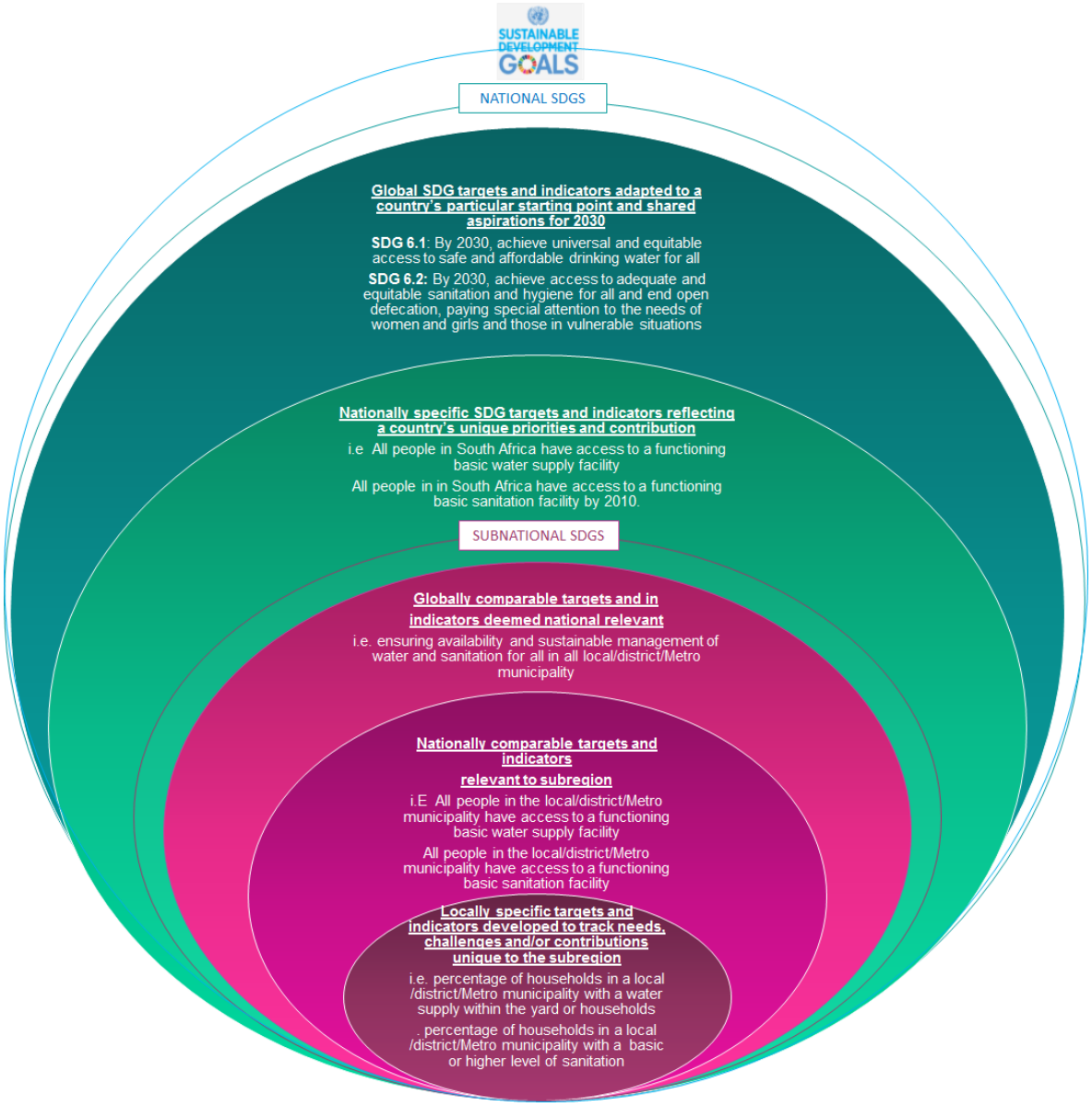


**Figure 35: A nesting approach to development and adopting developmental goals at a national level (adapted from UNDP, 2016)**

Experience from the MDGs showed that monitoring and evaluation of developmental goals must be encourage and successes with targets should be celebrated (UNDP, 2016). During the MDG era, the UN and its partners worked intensively to build and strengthen data for monitoring and reporting MDG indicators. Similarly, in future developmental goals, reporting of progress should be accessible to the general public as well as decision makers, enabling both to build on lessons learned from practice (UNDP, 2016).

The global participation of countries, programmes, initiatives, agencies and the more than 10 million people that engaged in UN-led consultations on the MDGs' successor agenda suggested that global goals were important, as the MDGs had succeeded in capturing the popular imagination and resulted in shared priorities for the globe (UNDP, 2016). It was clear

that global developmental goals mattered and had made an impact on development in many countries of the world. There was a demand for a successor agenda to the MDG developmental agenda, that would reignite hope for a better future and learn from and live up to the MDGs (UNDP, 2016). With these expectations in mind, UN Member States adopted, in September 2015, the ambitious new agenda, *Transforming our World: The 2030 Agenda for Sustainable Development* (Agenda 2030).

With the adoption of the 2030 Agenda for Sustainable Development, world leaders established 17 Sustainable Development Goals (SDGs) (Table 16), defining the world's development objectives until 2030 (UNDP, 2016). The 17 SDGs were integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environment.

**Table 16: The 17 Sustainable Development Goals**

| GOAL | |
|---|---|
| Goal 1 | End poverty in all its forms everywhere |
| Goal 2 | End hunger, achieve food security and improved nutrition and promote sustainable agriculture |
| Goal 3 | Ensure healthy lives and promote well-being for all at all ages |
| Goal 4 | Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all |
| Goal 5 | Achieve gender equality and empower all women and girls |
| **Goal 6** | **Ensure availability and sustainable management of water and sanitation for all** |
| Goal 7 | Ensure access to affordable, reliable, sustainable and modern energy for all |
| Goal 8 | Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all |
| Goal 9 | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation |
| Goal 10 | Reduce inequality within and among countries |
| Goal 11 | Make cities and human settlements inclusive, safe, resilient and sustainable |
| Goal 12 | Ensure sustainable consumption and production patterns |
| Goal 13 | Take urgent action to combat climate change and its impacts |
| Goal 14 | Conserve and sustainably use the oceans, seas and marine resources for sustainable development |
| Goal 15 | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss |
| Goal 16 | Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels |
| Goal 17 | Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development |

There were many changes in monitoring and reporting as the globe shifts from the MDG era to the SDG era. Table 17 provided a summary of the similarities and differences between the MDGs and SDGs. All the recommendations from the reviews of the MDGs were included in the new Agenda 2030 and the development and adoption of the 17 SDGs for 2030.

**Table 17: Comparison of the MDGs and the SDGs (adapted from UNDP, 2016)**

| Millennium Development Goals (MDGs) | Sustainable Development Goals (SDGs) |
|---|---|
| MDGs were extracted from the Millennium Declaration by UN experts and formally adopted by UN Member States in 2005 | The SDGs were negotiated by UN Member States, informed by UN-led global conversation involving 10 million (experts, leaders, people from all walks of life, including marginalized communities) |
| Year 2000 to 2015= 15 years | Year 2016 to 2030= 15 years |
| Goals phrased as to "reduce the backlog" in other words partial achievement | Much more ambitious as to achieve benefit for all or universal access |
| 8 goals, 21 targets and 60 indicators, focusing on poverty reduction | 17 goals and 169 indicators focusing on sustainable development |
| Primarily relevant to low income countries | Relevant to all countries |
| Water fell under MDG 7 on *environmental sustainability* | Specific SDG for water |

| Millennium Development Goals (MDGs) | Sustainable Development Goals (SDGs) |
|---|---|
| 2 core indicators on drinking-water and sanitation | 8 core indicators for water and sanitation (including wastewater and water resources) |
| Focus only on access to an "improved service" for drinking water | Focus expand to include water quality (safe water) and other service aspects such as reliability of service |
| Focus only on access to an "improved service" for sanitation | Focus extend to wastewater treatment, faecal sludge management |
| No hygiene indicators | Hand washing with soap |
| No clear agreement on follow-up, review process or accountability | Obligates "robust, effective, inclusive, transparent follow up and review at all levels" based on shared principles; defined global, regional follow up mechanisms |
| Monitoring focus only on households | Monitoring to expand to include WASH in schools and health care facilities |
| Global monitoring through household surveys and use census data | Monitoring by national authorities, feeding into regional and global reporting |
| Limited use of regulatory data | Greater scope for regulatory data to be used in global reporting. Regulation of water supplies will be emphasized as an able and appropriate regulatory authority can ensure compliance with this target. |

The Sustainable Development Goals were accompanied by targets and were further elaborated through indicators focused on measurable outcomes. The SDGs, like the MDGs, were thus developed and reported in a hierarchical framework, with each of the above goals tracked through a number of targets and the targets monitored using a suite of indicators (Figure 36). The hierarchy thus consisted of 17 SDGs goals, 169 targets and 231 global indicators (Appendix 4 provided a list of all the SDG goals, targets and targets). Regions and national levels indicators were expected to be developed, agreed and adopted to make the global goals regionally and nationally relevant but to also support the reporting of the global goals by countries.

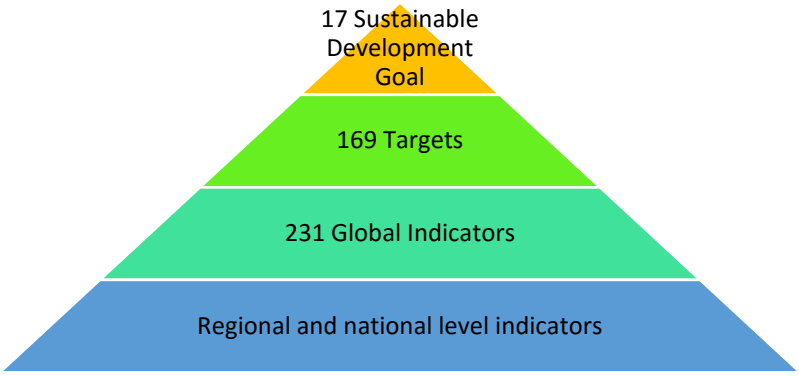


Figure 36: Hierarchy of 17 SDGs, targets and indicators

Progress with the SDGs and targets would be monitored and reported using the 231 supporting indicators. The UN (2015) indicated that global monitoring of the SDG indicators needed to be based on comparable and standardized national data. This data would be obtained through well-established reporting mechanisms from countries such as household surveys and censuses. However, in order to address the ambitions of the SDG targets, other data sources would need to be progressively integrated including, inter alia, from administrative sources and regulators (UN, 2015). Countries would need to improve or strengthen these reporting mechanisms (where necessary), to address data gaps where they exist, to adopt internationally agreed standards for data capture and to report and strengthen national statistical capacity. It was expected that countries would ensure that data provided at

the global level would be compatible and reconciled with the data published by the national statistical authorities or where there were discrepancies, these challenges would be carefully explained (UN, 2015).

There were a number of challenges with the global indicators linked to the SDGS, with the IAEG in their review of the indicators, classifying 230 of the SDGs indicators into 3 tiers based on their level of methodological development and data availability (Dunning and Kalow, 2016).

- Tier I Indicator: were indicators which were conceptually clear, had established methodology and standards available and had data which was regularly produced by countries.
- Tier II Indicator: these indicators were conceptually clear, had an established methodology and standards available but the data to report the indicators was not regularly produced by countries.
- Tier III Indicator: were indicators that did not have an established methodology/standards or which were being developed/tested.

Of the 230 SDG indicators which the IAEG reviewed, 97 (42%) of the indicators were classified by the IAEG-SDGs as Tier I. Despite this classification, even a cursory look at a Tier I indicator like indicator 1.1.1 (percentage of the population living on less than $1.90 a day) uncovers serious gaps in data, with at least 37% of UN member states reporting no data for this indicator since 2000 (Dunning and Kalow, 2016).

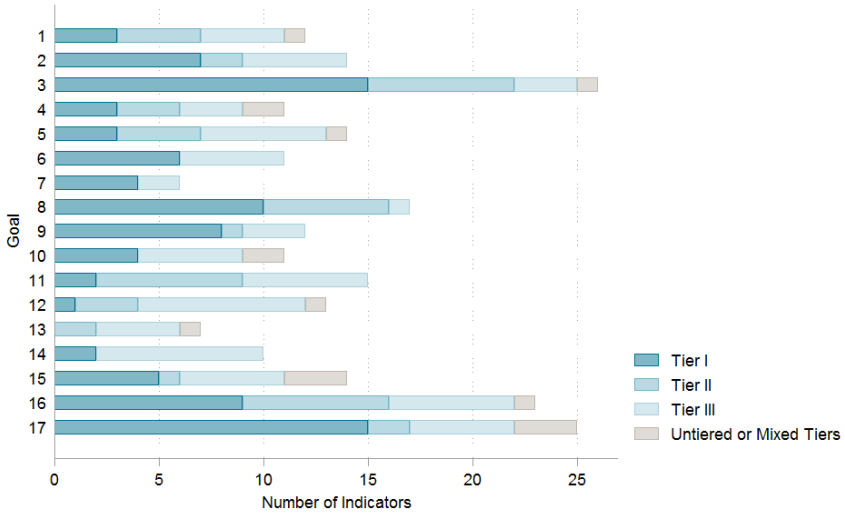


Figure 37: SDG Indicators by Tiers Classification (Dunnig and Kalow, 2016)

An important additional to the SDGs was a single, specific goal related to water, namely Goal 6: Ensure availability and sustainable management of water and sanitation for all (Table 18). It was reported by UN-Water that “the formal adoption of Sustainable Development Goal (SDG) no 6 represents a monumental achievement for the water community” (UN-Water, 2015). Goal 6 of the SDGs aimed ‘to ensure availability and sustainable management of water and sanitation for all’. This goal had elevated the profile of water and sanitation – moving from a mere sub-target in the MDGs under the broader environmental MDG to a stand-alone SDG goal. SDG 6 contained eight targets: six on outcomes with regard to water and sanitation, and two on the means of implementation of the outcome targets (Table 18). These new targets

were significantly more ambitious than the MDGs, in the call for universal access for all and not just merely “halving the backlog” as was the case with the MDGs.

Table 18: Targets related to SDG 6

| GOAL | TARGET | |
|---|---|---|
| Goal 6. Ensure availability and sustainable management of water and sanitation for all | 6.1 | By 2030, achieve universal and equitable access to safe and affordable drinking water for all |
| | 6.2 | By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations |
| | 6.3 | By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally |
| | 6.4 | By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity |
| | 6.5 | By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate |
| | 6.6 | By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes |
| | 6.a | By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies |
| | 6.b | Support and strengthen the participation of local communities in improving water and sanitation management |

From a regional perspective, between 2011 and 2015, AMCOW worked with the AUC, supported by BMZ-GIZ, to establish and implement a monitoring system based on a framework. The AMCOW Monitoring and Reporting Framework was a thematic framework, including 7 water-related themes and sub-themes which required monitoring and reporting. Under the sub-themes were a suite of targets and indicators (UNEP and DHI, 2016). The framework included 43 core indicators and 35 water and sanitation facts, i.e. in total 78 indicators (Table 19). Countries would be requested to provide 155 parameter values that are necessary to calculate all 78 indicator values.

Table 19: AMCOW Monitoring and Reporting Framework Themes and Sub-themes

| Theme | Sub-Theme | Theme | Sub-Theme |
|---|---|---|---|
| 1. Water infrastructure for growth | 1.1 Water for energy<br>1.2 Water for agriculture<br>1.3 Water for industry<br>1.4 Water for municipal use<br>1.5 Transboundary water infrastructure | 1. Governance and institutions | 5.1 Enabling environment<br>5.2 Institutions and participation<br>5.3 Management instruments<br>5.4 Transboundary cooperation<br>5.5 Ethics<br>1.6 Gender |
| 2. Managing and protecting water resources | 2.1 Sustainable withdrawals<br>2.2 Sustainable supply<br>2.3 Water quality<br>2.4 Groundwater<br>2.5 Ecosystems | 2. Financing | 5.1 Enabling environment<br>5.2 Institutions and participation<br>5.3 Management instruments<br>5.4 Transboundary cooperation<br>5.5 Ethics<br>5.6 Gender |
| 3. Water supply, sanitation, hygiene and wastewater | 3.1 Water supply<br>3.2 Sanitation<br>3.3 Hygiene<br>3.4 Wastewater treatment | 3. Information management and capacity development | 7.1 Information management<br>7.2 Capacity development |
| 4. Climate change and disaster risk reduction | 4.1 Climate change<br>4.2 Disaster risk reduction | | |

The first collection of data for the AMCOW *Africa Water Sector and Sanitation Monitoring and Reporting* occurred between 3rd October 2016 and 2nd December 2016 (AMCOW, 2016). The baseline year for AMCOW reporting was thus 2016, particularly for South Africa where most data for indicators was only available in 2016.

# 4 FUTURE MONITORING AND REPORTING OF WATER SUPPLY AND SANITATION (POST-2015)

South African water supply, sanitation and hygiene monitoring and reporting had, between 2016-2017, moved into a new era, with a number of local, national and international indicators, targets and goals requiring measurement and reporting at various intervals and with an array of methods, tools and analysis protocols. Consistent across these monitoring and reporting imperatives was the 2030 target date for monitoring and the need to achieve targets and goals by that year.

From a South Africa perspective, the country will be monitoring and reporting:

1. the international water supply, sanitation and hygiene **SDGs, targets and indicators** – noting that all the water SDG targets impact and are impacted by the WASH indicators and targets and that a number of the other SDGs were also reliant on and impacted on the WASH targets and indicators, i.e. poverty, hunger, health SDG; environmental SDG;
2. the international **GLAAS** targets and indicators;
3. the regional **AMCOW** water supply, sanitation and hygiene SDGs, targets and indicators; and
4. the national **NDP; MTSF; RMPS, Blue Drop; Green Drop; No Drop and policy water supply**, sanitation and hygiene goals, targets and indicators.

The country was thus moving into a new era of monitoring of water and sanitation. This era will be characterised by the monitoring and reporting of the Sustainable Development Goals and progress with water supply and sanitation targets in the NDP, MTSF and amended water supply and sanitation policies and strategies of the country. The monitoring and reporting requirements emanating for each of these initiatives/policies were discussed in more detail below.

## 4.1 WATER SUPPLY, SANITATION AND HYGIENE SUSTAINABLE DEVELOPMENT GOAL

The Sustainable Development Goal 6 had three water supply, sanitation and hygiene (WASH) targets which would be monitored by three outcome indicators (see Table 20). The UN-Water had interpreted each of the indicators which would be used to monitor progress toward each target and had provided a standard method of data collection, analysis and communicating each indicator. This section of the report provides an overview of the UN-Water's interpretation of each of the targets and indicator for achieving the WASH global development goals.

**Table 20: WASH targets and indicator related to SDG 6**

| GOAL | TARGET | | INDICATORS |
|---|---|---|---|
| Goal 6. Ensure availability and sustainable management of water and | 6.1 | By 2030, achieve universal and equitable access to safe and affordable drinking water for all | Indicator 6.1.1 Proportion of population using safely managed drinking water services |
| | 6.2 | By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations | Indicator 6.2.1 proportion of population using safely managed sanitation services, |

| GOAL | TARGET | INDICATORS |
|---|---|---|
| sanitation for all | | including a hand-washing facility with soap and water. |
| | 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally | Indicator 6.3.1 Proportion of wastewater safely treated |

Apart from these three important SDG WASH indicators, which South Africa would need to monitor and report between 2016 and 2030, two of the other SDGs and their related targets and indicators had direct links to WASH in the country (Table 21). It would be necessary for the WASH sector of the country to also monitor and report progress with these targets and indicator between 2016 and 2030.

Table 21: WASH targets and indicators in other SDGs

| GOAL | TARGET | INDICATORS |
|---|---|---|
| **SDG 1: End poverty in all its forms everywhere** | Target 1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as **access to basic services**, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance | Indicator 1.4.1: Proportion of population living in households with access to basic services |
| **SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all** | Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all. | Indicator 4.a.1: Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities**; (e) basic drinking water**; (f) **single-sex basic sanitation facilities; and (g) basic handwashing facilities** (as per the WASH indicator definitions). |

The sections below provided an overview of these SDG indicators which South Africa would need to report between 2016 and 2030 as these indicators would guide WASH monitoring and reporting over these coming years.

### 4.1.1 Sustainable Development Target 6.1 Related to Water Supply

**Target 6.1: By 2030, Achieve Universal And Equitable Access To Safe And Affordable Drinking Water For All**

**Indicator 6.1.1 Proportion of population using safely managed drinking water services**

Availability of potable drinking water was one of the essential requirements for health of a households (UN-Water, 2016c). This essential requirement was captured in SDG Target 6.1, which seeks to monitor and report on progress in securing safe and affordable drinking water for all (UN-Water, 2016c).

An important addition to the target (as compared to the MDG) was the need for equity in access to water supply, which implied that water supply was equitably accessible to all groups

of the population irrespective of race, gender, economic status, etc. This does not imply that all households would receive the same levels of service, but rather that water supply (of various levels) would be equitability available to all individuals. The second aspect of the target was the affordability of water supplied, which linked to equity, required countries to ensure that the ability or inability to pay for the service did not limit an individual's ability to access a water supply. The target also focussed not only on water supplies available at a household level, indicating that universal access would include access to water supply at all public places such as schools, health-care facilities and in the workplace.

To track progress towards achieving SDG Target 6.1, one indicator had been proposed, namely the *SDG Indicator 6.1.1, proportion of population using safely managed drinking water services*. SDG indicator 6.1.1 built on the MDG indicator "proportion of population using an improved drinking water source", adding aspects of the quality of the water ("safe", free of contamination), the accessibility of the source ("located on premises") and the availability of the source (UN-Water, 2016b). SDG Indicator 6.1.1 could be deconstructed in the manner shown in Table 22, with the normative interpretation of the components which make up the indicator providing insight into the aspects which would be monitored and reported by the indicator.

Table 22: Normative interpretation of SDG Indicator 6.1.1. (Adapted from UN-Water 2016b)

| Target Text | Normative interpretation |
|---|---|
| **Proportion of the population** | Implies the population in all exposure and settings including households, schools, health-care facilities and workplaces |
| **Using safely managed drinking water services** | Implies individuals that are:<br>a) using an **improved drinking water source**<br>b) which is **located on premises**<br>c) **available when needed** and<br>d) **free of faecal (and priority chemical) contamination** |

#### *4.1.1.1 What do we Need to Measure and Monitor Indicator 6.1.1?*

The JMP reports the water supply, sanitation and hygiene targets (6.1.-6.3) for SDG 6 would be based on service 'ladders', which enabled benchmarking and comparison of progress across countries at different stages of development (WHO and UNICEF, 2017). The UNICEF and World Health Organization (2017) report introduced an updated water ladders which built on established indicators and establishes new rungs with additional criteria relating to service levels (WHO and UNICEF, 2017) (Figure 38). The JMP, and thus South Africa, would continue to monitor all rungs on the water ladder, with a particular focus on those that relate to the Sustainable Development Goal (SDG) global targets and indicators.

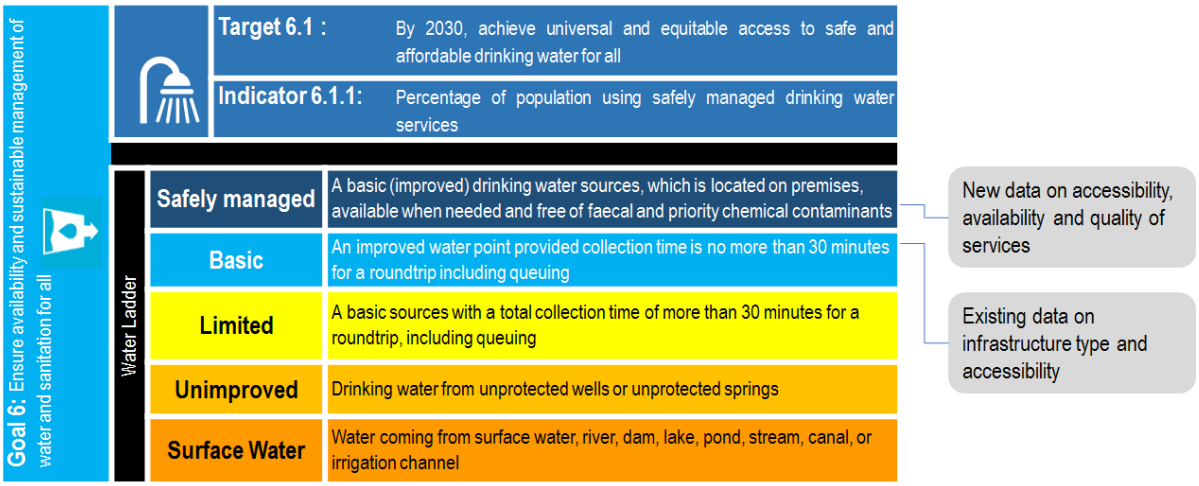


Figure 38: JMP Safe Water Supply Ladder (WHO and UNICEF, 2017)

To monitor progress with SDG Target 6.1 safe and affordable drinking water for all, requires that all individual were (WHO and UNICEF, 2017):

e) using an **improved drinking water source** ('improved' sources of drinking water used for MDG monitoring, i.e. piped water into dwelling, yard or plot; public taps or standpipes; boreholes or tubewells; protected dug wells; protected springs and rainwater)
f) which is **located on premises**
g) **available when needed** and
h) **free of faecal (and priority chemical) contamination**

In other words, all individuals would reach the upper rung of the water ladder shown in Figure 38.

*What was an improved drinking water source?*

Within the new service level ladder shown in Figure 38, the first condition for a safely managed water service (top rung of the ladder) was having access to an **improved drinking water source**. An improved drinking water source was one which, by nature of their design and construction, have the potential to deliver safe water. An improved drinking water source according to the JMP was thus (WHO and UNICEF, 2017):

a) piped water,
b) boreholes or tubewells,
c) protected dug wells,
d) protected springs, and
e) rainwater.

The JMP recognized that bottled water and tanker truck water could potentially deliver safe water, but due challenges with data on accessibility, availability and quality, were currently treating them as improved and classify them as 'limited', 'basic' or 'safely managed', based on the criteria outlined above (WHO and UNICEF, 2017).

In the context of the service provided, all top three categories on the water ladder in Figure 38 required individuals to have access to an improved. The JMP thus subdivided the population using improved sources into three groups (unimproved; basic and safe) according to the level of service provided. In order to meet the criteria for a safely managed drinking water service, people must use an improved source meeting three criteria (WHO and UNICEF, 2017):

- it should be accessible on premises,
- water should be available when needed, and
- the water supplied should be free from contamination.

If any of the three conditions were not met, but the improved source was within 30 minutes of the home, it could be categorized as a 'basic' service.

If any of the three conditions were not met, but the improved source was greater than 30 minutes from the home (round-trip), it could be categorized as a 'limited' service.

*What was an improved drinking water service located on premises?*

The second JMP condition for a safely managed drinking water supply service is an improved water source which was located on premises. In other words the water source needed to be within the dwelling, yard or plot (WHO, 2017). A safely management improved drinking water source would therefore be:

a) piped water *within the dwelling, yard or plot,*
b) boreholes or tubewells *within the dwelling, yard or plot,*,
c) protected dug wells *within the dwelling, yard or plot,*,
d) protected springs *within the dwelling, yard or plot*
e) bottled water *within the dwelling, yard or plot*
f) tanker truck delivering water *to the dwelling, yard or plot*

If any of the improved water source was outside the *dwelling, yard or plot* it was classified as a basic service if it is within 30 minutes walking distance and a unimproved water service if it was further than 30 minutes walking distance from the household (WHO, 2017).

*What was an improved drinking water service that was available when needed?*

The third JMP condition for a safely managed drinking water supply service was an improved water source that was *available when needed*.

What does 'available when needed mean"? According to WHO, drinking water should be available in sufficient quantities at all times (WHO, 2017).

Where improved drinking water supply sources were not available when needed as supply are too far away, unreliable or intermitted (available for a few hours a day or only on certain days), households typically store water to ensure that it was available when needed (WHO, 2017).

The JMP recognised a number of different concepts could be used to measure an improved water source that is available when needed (WHO, 2017). These include:

a) the quantity of water available or used in a given time period,
b) the hours of service per day (typically for piped supplies),
c) the frequency of breakdowns and the time required for repairs (typically for point sources such as boreholes).

For the purpose of SDG monitoring, the JMP focussed on the amount of time when water is available (hours of service per day), using two main types of data, namely (WHO, 2017):

a) household responses to questions on *availability of drinking water when needed* in nationally representative surveys or censuses. Households reporting not having sufficient water available when needed during the last week or month would be categorized as 'not available when needed'. This indicator would also capture problems caused by non-functioning water points.
b) Or where households survey or census data is not available, data will be collected from regulators or utilities on the *number of hours of service per day,* usually only for piped networks. Regulators may specify different thresholds for different types of utilities.

A safely management improved drinking water source would therefore be:

a) piped water within the dwelling, yard or plot *that was available when needed*,
b) boreholes or tubewells within the dwelling, yard or plot *that was available when needed*,
c) protected dug wells within the dwelling, yard or plot *that was available when needed*,
d) protected springs within the dwelling, yard or plot *that was available when needed*
e) bottled water within the dwelling, yard or plot *that was available when needed*
f) tanker truck delivering water to the dwelling, yard or plot *that was available when needed*

*What was an improved drinking water service that was free from contamination?*

The final JMP condition for a safely managed drinking water supply service was an improved water source that was free from faecal and priority chemical contamination.

What does 'free from faecal and priority chemical contamination"? According to WHO, for an improved drinking water service to be considered safe, drinking water must be free from pathogens and elevated levels of harmful substances at all times (WHO, 2017).

Most countries, including South Africa, have national standards (SANS:241) that were aligned with WHO *Guidelines for Drinking Water Quality*. In this standard, the highest priority for a water supply sources was that of the faecal contamination parameters. Faecal contamination of drinking water was usually identified through the detection of indicator bacteria such as *Escherichia coli (E. coli)* in a 100 mL sample or *Faecal coliforms* in a 100 mL sample (WHO, 2017).

The JMP recognized that the best way to ensure water safety was through a holistic risk management approach such as water safety plans (WHO, 2017). However, only a small number of countries, including South Africa through the GD performance system, currently have data on the proportion of people using systems that were covered by a verified water safety plan. Hence, the principal indicator of water safety used by the JMP for a safely

managed improved drinking water supply would be the absence of faecal indicator bacteria in a 100 mL sample (WHO, 2017).

A safely management improved drinking water source would therefore be:

a) piped water within the dwelling, yard or plot that was available when needed and *was free of faecal contamination*,
b) boreholes or tubewells within the dwelling, yard or plot that was available when needed *was free of faecal contamination*,
c) protected dug wells within the dwelling, yard or plot that was available when needed *was free of faecal contamination*,
d) protected springs within the dwelling, yard or plot that was available when needed *was free of faecal contamination,*
e) bottled water within the dwelling, yard or plot that was available when needed *was free of faecal contamination, and*
f) tanker truck delivering water to the dwelling, yard or plot that was available when needed *was free of faecal contamination*

South Africa would, between 2016 and 2030, have to monitor and report the proportion of the population with access to a water supply service on each rung of the water ladder shown in figure 38. Important for tracking progress with SDG Target 6.1 would be to report the proportion of the population with access to a safely managed water service – a service which meets at least one of the type of water sources shown in bullet a-f above. The question remains, did South Africa have the data and capacities to report all the component required to report the levels of access to a safely managed water services in the country.

### 4.1.2 Sustainable Development Goal 6.2 Related to Sanitation

**Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations**

**Indicator 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.**

The second WASH target which South Africa would need to report between 2016 and 2030 was *SDG 6.2: by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations* (UN-Water, 2016a).

Similar to SDG Target 6.1 related to water supply, achieving Target 6.2 would require equitable access to sanitation globally. This target also paid special attention to addressing the sanitation and handwashing needs of women and girls. Positive progress with the target would impact on women and girls by reducing the distances that these individuals had to walk to collect water and visit a sanitation facility. This would ease the burden of women and girls to care for their households, particularly in caring for sick individuals in the household, having privacy in sanitation and hygiene practices and feeling safe in carry out water and sanitation practices.

Progress toward achieving SDG target 6.2 was measured through a single indicator, namely the "*proportion of population using **safely managed sanitation services**, including a hand-washing facility with soap and water*" (Indicator 6.2.1.)". SDG indicator 6.2.1. thus built on the MDG indicator "*proportion of population using an improved sanitation facility*", but added aspects of the quality of the sanitation ("safely managed", free of contamination), access to a handwashing facility, soap and water ("located on premises") and the availability of the source (UN-Water, 2016a).

SDG Indicator 6.2.1 could be deconstructed in the manner shown in Table 23, with the normative interpretation of the components which make up the indicator providing insight into the aspects which would be monitored and reported by the indicator

Table 23: Normative interpretation of SDG Indicator 6.2.1 (WHO and UNICEF, 2017)

| Target Text | Normative interpretation |
|---|---|
| **Proportion of the population** | Implies the population in all exposure and settings including households, schools, health-care facilities and workplaces |
| **using safely managed sanitation services** | Implies individuals<br>• using an **improved sanitation facility**<br>• **not shared** with other households, and<br>• the **excreta** produced was either:<br>  ○ treated and disposed of in situ,<br>  ○ stored temporarily and then emptied, transported and treated off-site, or<br>  ○ transported through a sewer with wastewater and then treated off-site. |

### 4.1.2.1 ***What do we Need to Measure and Monitor the Sanitation Component of Indicator 6.2.1?***

The UNICEF and World Health Organization 2017 report introduced an updated sanitation ladders which built on established indicators and establishes new rungs with additional criteria relating to service levels (WHO and UNICEF, 2017) (Figure 39). The JMP, and thus South Africa, would continue to monitor all rungs on the sanitation ladder, with a particular focus on those that relate to the Sustainable Development Goal (SDG) global targets and indicators.

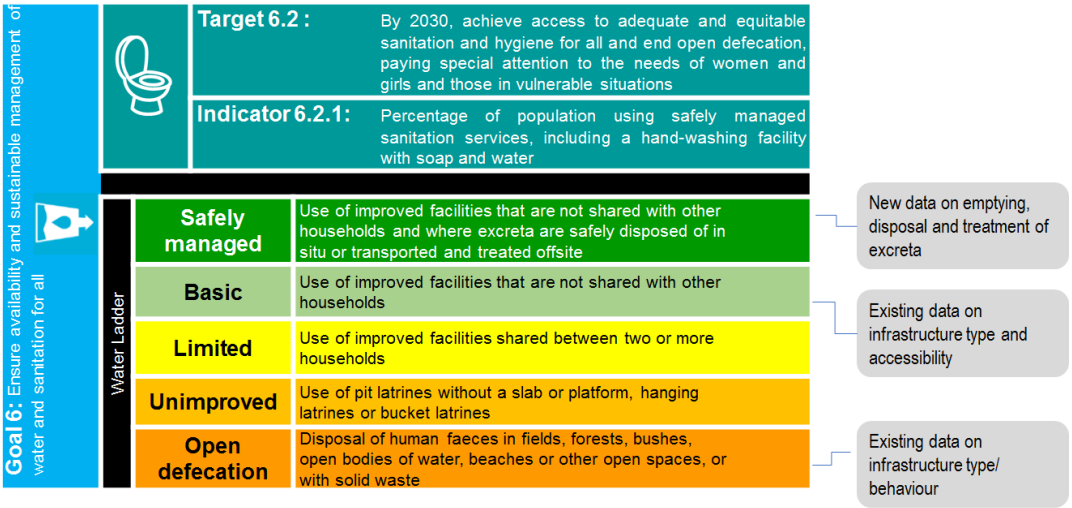


Figure 39: JMP Safe Sanitation Ladder (WHO and UNICEF, 2017)

At the bottom of the sanitation ladder (Figure 39) would be the population which was practicing open defecation. A key priority of SDG 6.2 was the elimination of open defecation – namely moving individuals up the sanitation ladder. The next rung on the ladder was households which had an unimproved sanitation, classified as the population which had access to (a) a pit latrines without slab; (b) a hanging latrine and (c) a bucket latrines (WHO and UNICEF, 2017).

The top three levels in the sanitation ladder were classified by the JMP as the population which had access to an **improved sanitation facility**. An improved sanitation facility could therefore, be divided into three categories, namely the population with access to a **limited, basic** and **safely managed** sanitation service (WHO and UNICEF, 2017).

**Limited service:** If the households had an improved sanitation facility but the facility was shared with other households, the households would be listed as having a limited sanitation service (WHO and UNICEF, 2017). This was a change in the naming from the households having a 'shared' service, as was reported during the MDG era.

**Basic services:** A household with an improved facilities that was not shared with other households, would be listed as having either basic or safely managed services, depending on how excreta was managed (WHO and UNICEF, 2017). If the sanitation facility was exclusively available to the household but the excreta was not safely managed, the household was listed as having a basic sanitation service (WHO and UNICEF, 2017).

**Safely managed services:** a safely managed sanitation services was thus *defined as the population using an improved sanitation facility that was not shared with other households, and where excreta were disposed of in situ or transported and treated off-site* (WHO and UNICEF, 2017). A safely managed service thus had an improved sanitation facility that was connected to either a sewer networks or to on-site storage and treatment facilities such as septic tanks or latrine pits.

The JMP thus defines a safely managed sanitation services as the proportion of South Africa's population that was (WHO and UNICEF, 2017):

- using an **improved sanitation facilities**
- **not shared** with other households, and
- the **excreta** produced was either:
    - treated and disposed of in situ,
    - stored temporarily and then emptied, transported and treated off-site, or
    - transported through a sewer with wastewater and then treated off-site.

*What is an improved sanitation facility?*

Within the new sanitation service level ladder shown in Figure 39, improved sanitation facilities were those designed to hygienically separate excreta from human contact. An improved sanitation facility according to the JMP thus included (WHO and UNICEF, 2017):

- wet sanitation technologies of
    - flush and pour flush toilets connecting to sewers,
    - flush and pour flush toilets connecting to septic tanks or
    - flush and pour flush toilets connecting to pit latrines

- dry sanitation technologies of:
    - ventilated improved pit (VIP) latrines;
    - pit latrines with slabs
    - composting toilets.

In order to meet the criteria for a safely managed sanitation service, individuals must have access to one of these types of wet or dry sanitation technologies that also met two other criteria, namely:

- that it was not shared with other households
- the excreta was disposed of in-situ or transported and treated off-site

*What was an improved sanitation facility that is not shared?*

The first JMP condition for a safely managed sanitation service was an improved sanitation facility that was not shared. In other words the sanitation facility needed to be exclusively available to a single household. A safely management improved sanitation facility would therefore be:

- wet sanitation technologies of*:*
    - *household exclusive* flush and pour flush toilet that connected to the sewers,
    - *household exclusive* flush and pour flush toilets that connected to a septic tanks,
    - *household exclusive* flush and pour flush toilets that connected to a to pit latrines,
- dry sanitation technologies of:
    - *household exclusive* ventilated improved pit (VIP) latrine,
    - *household exclusive* pit latrine with a slab, and
    - *household exclusive* composting toilet.

If the improved water source was shared and not exclusively available to the households it was classified as a limited service. Similarly if the sanitation facility was exclusively available to the household but the excreta was not safely managed, the household was listed as having a basic sanitation service (WHO and UNICEF, 2017).

*What was an improved sanitation service where excreta was disposed of in situ or transported and treated off-site?*

The second JMP condition for a safely managed sanitation service was an improved sanitation facility *where excreta* was *disposed of in situ or transported and treated off-site* (WHO and UNICEF, 2017).

What does '*excreta* was *disposed of in situ or transported and treated off-site*"? According to UN (2017), an improved sanitation facility should either be connected to a sewer network (off-site treatment) or to an on-site storage and treatment (on-situ treatment) facility such as septic tanks or latrine pit. The collection of reliable statistics on treatment and disposal of excreta was therefore a prerequisite for safe management of sanitation services.

Households would be classified as having *safely managed* sanitation services if their sanitation facility was not shared with another households (exclusively theirs) and if the wastes

flushed out of the household reach a treatment plant and underwent at least a minimum level of treatment, namely (UN, 2017b):

- primary treatment where the effluent is discharged through a long ocean outfall[9],
- secondary treatment[10] or
- tertiary or advanced treatment [11]

UNICEF and World Health Organization (2017) indicated that for a safely managed sanitation facility excreta produced should either be:

- treated and disposed of in situ,
- stored temporarily and then emptied, transported and treated off-site, or
- transported through a sewer with wastewater and then treated off-site.

A safely management improved sanitation facility would therefore be:

- *wet sanitation technologies of:*
    - household exclusive flush and pour flush toilet that connected to the sewers *where excreta* was *transported and treated off-site*,
    - household exclusive flush and pour flush toilets that connected to a septic tanks *where excreta* was *stored temporarily and then emptied, transported and treated off-site or treated and disposed of in situ*
    - household exclusive flush and pour flush toilets that connected to a to pit latrines, *where excreta* was *where excreta* was *stored temporarily and then emptied, transported and treated off-site or treated and disposed of in situ,*
- *dry sanitation technologies of:*
    - household exclusive ventilated improved pit (VIP) latrine *where excreta* was *stored temporarily and then emptied, transported and treated off-site or treated and disposed of in situ*,
    - household exclusive pit latrines with a slab *where excreta* was *stored temporarily and then emptied, transported and treated off-site or treated and disposed of in situ*, and
    - household exclusive composting toilet *where excreta* was *treated and disposed of in situ*.

To protect communities and children from pathogen exposure it was vitally important in striving to achieve Target 6.2 that countries recognized the need to manage excreta along the entire sanitation chain – for both sewered and non-sewered systems (UN, 2017a). If the sanitation facility was connect to open drains or discharged directly into surface water instead of reaching sewers, or if sewage could leak or overflow out of sewers and pumping stations before

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[9] *Primary treatment is a mechanical, physical or chemical process involving settlement of suspended solids or any other process in which the biochemical oxygen demand (BOD) of the incoming water is reduced by at least 20 per cent before discharge, and the total suspended solids of the incoming water are reduced by at least 50 per cent (UN, 2017a).*

[10] *Secondary treatment is a process that follows primary treatment of water and generally involves biological or other treatment with a secondary settlement or other process that results in a BOD removal of at least 70 per cent and a chemical oxygen demand (COD) removal of at least 75 per cent (UN, 2017a)..*

[11] *Tertiary treatment is a process that follows secondary treatment and removes nitrogen, phosphorous or any other pollutant, such as microbiological pollution or colour, that affects the quality or a specific use of water (UN, 2017a)..*

reaching treatment plants, these households would be classified as NOT having safely managed services (UN-Water). Currently however, where data on failures of sewer and treatment systems were limited, the JMP SDG Indicator 6.2.1 assumed that excreta from households that report having sewer connections actually reach a sewer line, and were transported as wastewater to a treatment plant.

If a country had a high percent of the population with access to sewer connection systems and data was available on wastewater treatment the JMP was able to make an estimate of safely managed sanitation services. However, in countries where on-site sanitation was more prevalent, data on wastewater treatment was not sufficient to be able to report the 'safely managed" component of SDG Indicator 6.2.1 (UN, 2017b).

The question remains, does South Africa have baseline data to report the *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* and how will the country monitor and report this indicator?

### 4.1.3 Sustainable Development Goal 6.2 Related to Hygiene

**Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations**

**Indicator 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.**

Despite hygiene having been shown to have an impact on public health, it was not one of any of the MDG targets or indicators (WHO and UNICEF, 2017). This had change with the advent of the SDGs. The second WASH target of SDG Goal 6 was *SDG 6.2: by 2030, achieve access to adequate and equitable sanitation **and hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*. The target thus required adequate and equitable access to hygiene for all. The presence of a handwashing facility with soap and water on a premises had been identified as the priority indicator for global monitoring of hygiene under the SDGs. Thus the indicator for SDG Target 6.2 included both the *proportion of population using safely managed sanitation services AND* the *proportion of population using **a hand-washing facility with soap and water***.

The inclusion of hygiene in indicator 6.2.1 demonstrated the recognition that had been afforded to hygiene within the WASH sector. Good hygiene, a broad, multifaceted concept, required good behaviour within many households practices, i.e. food preparation; handwashing; menstrual hygiene and sanitation. Hence there were many ways to measure hygiene in SDG Indicator 6.2.1. International WASH professionals however, identified handwashing with soap and water as a top priority in all settings. This was therefore selected as the indicator for good WASH hygiene behaviour.

The JMP defines this indicator as the proportion of South Africa's population (WHO and UNICEF, 2017):

i) using an **handwashing facility on the premises**

j) with **soap**
k) with **water**

### 4.1.3.1 *What Do we Need to Measure and Monitor for the Hygiene Component of Indicator 6.2.1?*

Noting the need to monitor and report whether or not households had a handwashing facility with soap and water, the JMP had introduced a third ladder for hygiene (Figure 40).(UN, 2017a).

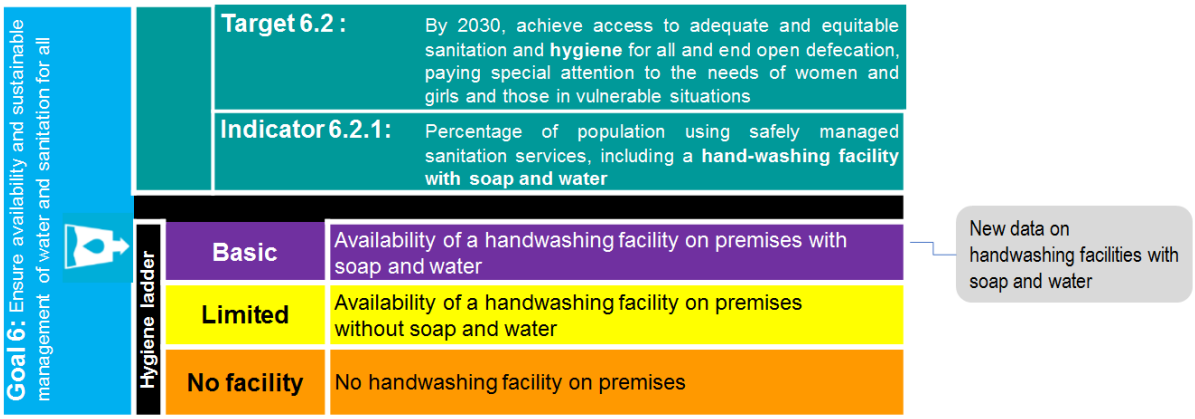


Figure 40: JMP Safe Water Supply Ladder (WHO and UNICEF, 2017)

The JMP hygiene ladder had three levels for hygiene, namely **no facility**; **limited** and **basic hygiene services**.

**Limited hygiene:** In households where individuals had access to only a handwashing facility, i.e. do not have access to water and/or soap for handwashing, the individuals were classified as having **limited** hygiene services.

**Basic hygiene:** In households where individuals had access to a handwashing facility, which had soap and water available on premises were classified as having **basic** hygiene services.

### 4.1.3.2 *What was a handwashing facility?*

The first criteria for a household to be classified as having a basic hygiene facility was the availability of a handwashing facility. According to UNICEF and World Health Organization (2017), a handwashing facility could be fixed or mobile consisting of:

- a sink with tap water on the premises
- devices that contain, transport or regulate the flow of water on the premises
- buckets with taps on the premises
- tippy-taps on the premises
- portable basins on the premises

*What was a handwashing facility with soap?*

The second component of a basic hygiene facility was that of having soap. The UNICEF and World Health Organization (2017) indicated that the following would be classified as soap:

- Bar soap,
- liquid soap,
- powder detergent
- soapy water

Only those individuals that had access to soap would be classified as having basic hygiene, hence in cases where handwashing materials such as ash, soil, sand or other materials were used, individuals would still be classified as having limited hygiene facilities.

A basic hygiene facility would therefore be (WHO and UNICEF, 2017);

- a sink with tap water on the premises with *bar soap, liquid soap, powder detergent or soapy water*
- devices that contain, transport or regulate the flow of water on the premises with b*ar soap, liquid soap, powder detergent or soapy water*
- buckets with tap on the premises that has *bar soap, liquid soap, powder detergent or soapy water*
- tippy-taps on the premises with *bar soap, liquid soap, powder detergent or soapy water*
- portable basins on the premises with *bar soap, liquid soap, powder detergent or soapy water*

*What was a handwashing facility with soap and water?*

The final component required for a basic hygiene facility was water on the premises for handwashing. This indicator linked directly to SDG Indicator 6.1.1 which focussed on ensuring a safely managed water supply service on the premises. Hence a basic hygiene facility would be (WHO and UNICEF, 2017);

- a sink with tap water on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- devices that contain, transport or regulate the flow of water on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- buckets with tap on the premises that has bar soap, liquid soap, powder detergent or soapy water *AND access water*
- tippy-taps on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- portable basins on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*

The question remains, did South Africa have baseline data to report the *SDG 6.2.1 proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water*** and how will the country monitor and report this indicator?

### 4.1.4 Sustainable Development Goal 6.3 Related to Wastewater

**Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally**

**Indicator 6.3.1 Proportion of wastewater safely treated**

Inadequate or not treating domestic and industrial wastewater presents a serious health and environmental hazard. With growing populations and urbanisation, more individuals were connecting to waterborne sanitation systems. This placed a significant and increasing burden on the systems, with the rates of wastewater generation increasing at an exponential rate. Large volumes of wastewater were often untreated or inadequately treated and returned to water resources, threatening human health, ecosystems, biodiversity, food security and the sustainability of water resources.

To protect communities, particularly vulnerable groups within the community, from pathogen exposure it was vitally important in striving to achieve Target 6.2 that countries recognize the need to manage excreta along the entire sanitation chain – for both sewered and non-sewered systems (UN, 2017b). Since, in many situations, the sanitation chain had the discharge of treated wastewater into some natural resource, the new SDGs had included a target which protects these natural resource from pollution from sources such as wastewater. Hence, the SDGs included *Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally*

The UN-Water (2016) provided the definition of this target as the proportion of wastewater generated by households (sewage and faecal sludge) and economic activities (based on ISIC categories) that was safely treated. Target 6.3 set to monitor and report progress protecting water quality by eliminating, minimizing and significantly reducing different streams of pollution into water bodies. The target also focused on monitoring and reporting progress with recycling (for example, recirculating water within an industry) and reuse (for example, using wastewater in agriculture) of treated wastewater, complementary to the focus on reduced freshwater withdrawals and increased use efficiency (SDG Target 6.4) (WHO, 2016b).

To monitor and report progress towards SDG Target 6.3 two indicators had been proposed, namely the *SDG Indicator 6.3.1 Proportion of wastewater safely treated* and *SDG Indicator 6.3.2 Proportion of bodies of water with good ambient water quality*. Both of these indicators related to the management of sanitation services in South Africa, and were intrinsically linked, with safely treated wastewater (reported by indicator 6.3.1) impacting directly on the ambient quality of water in the water resources of the country (reported by indicator 6.3.2). Since Indicator 6.3.1 was directly linked to WASH in the country, it was the focus of this report.

SDG Indicator 6.3.1 could be deconstructed in the manner shown in Table 24, with the normative interpretation of the components which make up the indicator providing insight into the aspects which would be monitored and reported by the indicator

Table 24: Normative interpretation of SDG Indicator 6.3.1 (WHO and UNICEF, 2017)

| Target Text | Normative interpretation |
|---|---|
| **Proportion of** | Implies wastewater sourced from households, industry and commercial activities, including productive industries and processes and commercial and institutional sources (WHO, 2016a). The indicator assumed that ALL commercial wastewater (unless a country wishes to report to the contrary) will be disposed of to a municipal sewer. |
| **Wastewater** | Discarded water that is no longer required by the owner or user including discharges to drains or sewers for treatment or direct discharges into the environment, as well as water reused by another user without further treatment |
| **Safely treated** | Treatment implies any process for rendering wastewater fit to meet applicable environmental standards or other quality norms. Treatment can be categorised into primary, secondary and tertiary treatments (and further by mechanical, biological and advanced technology treatments) |

Data on SDG Indicator 6.2.1 (discussed above in Section 4.1.2) fed directly into the monitoring of SDG Target 6.3.1.

#### *4.1.4.1 What do we Need to Measure and Monitor Indicator 6.3.1 of Target 6.3?*

Indicator 6.3.1 had two component requirements for households to be included in the beneficiary population for this indicator, namely the (a) all wastewater in the household or economic activity and (b) must be safely treatment.

*What was the population?*

Growing populations and urbanisation which resulted in an increasing percent of the population connecting to waterborne sanitation systems was not the only population impacting on the indicator. An increasing number of economic activities were also connecting to wastewater treatment systems, including manufacturing, trade, production systems, etc. This placed a significant and increasing burden on the systems, with the rates of wastewater generation increasing at an exponential rate. SDG Indicator 6.3.1 thus measured the proportion of wastewater generated by households and by economic activities (based on ISIC categories) that was safely treated compared to total wastewater generated by households and economic activities.

The SDG sanitation service ladder (see Section 4.2.1 above) was used to track progress with SDG Indicator 6.3 (WHO, 2016b). Hence, the population and economic activities with access to a limited and safely managed service, namely the population with:

- an improved sanitation facility *where excreta are disposed of in situ or transported and treated off-site* but the facility was shared, and
- *an improved sanitation facility that is not shared with other households, and where excreta are disposed of in situ or transported and treated off-site* (WHO and UNICEF, 2017).

Wastewater considered under this part of the monitoring framework addressed sources from industry and commercial activities, including productive industries and processes and commercial and institutional sources (WHO, 2016b). The indicator assumed that ALL commercial wastewater (unless a country wishes to report to the contrary) will be disposed of to a municipal sewer.

*What was wastewater?*

Wastewater, that had also been referred to as 'used water' or 'effluent', had been defined in various ways and differently in various countries. There was no single universally accepted definition for the term (WWAP, 2017). The UN-Water Analytical Brief on Wastewater Management (UN-Water, 2015a) defined wastewater as "a combination of one or more of:

- domestic effluent consisting of blackwater (excreta, urine and faecal sludge) and greywater (kitchen and bathing wastewater);
- water from commercial establishments and institutions, including hospitals;
- industrial effluent, stormwater and other urban run-off;
- agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter" (Corcoran et al. 2010 in UN-Water 2015a).

The JMP (2016) defines wastewater to include water that is discarded as it is no longer required by the owner or user, including:

- discharges to drains
- discharges from sewers
- Direct discharges into the environment,
- Water reused by another user without further treatment

According to (WHO, 2016b), apart from the wastewater generated by households and non-hazardous economic activities (municipal wastewater), monitoring and reporting of SDG Indicator 6.3.1 also required monitoring of:

- Wastewater from commercial establishments
- Wastewater from non-hazardous industries
- Wastewater from hazardous industries

Hence this component of Indicator 6.3.1 would therefore include:

- wet sanitation technologies of:
    - **household flush and pour flush** toilet that connected to the sewers where excreta was transported and treated off-site and wastewater from commercial establishments ; from non-hazardous industries and from hazardous industries
    - **household flush and pour flush toilets** that connected to a septic tanks where excreta was stored temporarily and then emptied, transported and treated off-site and wastewater from commercial establishments ; from non-hazardous industries and from hazardous industries
    - **household flush and pour flush toilets** that connected to a to pit latrines, where excreta was where excreta was stored temporarily and then emptied, transported and treated off-site and wastewater from commercial establishments ; from non-hazardous industries and from hazardous industries
- dry sanitation technologies of:
    - **household ventilated improved pit (VIP)** latrine where excreta was stored temporarily and then emptied, transported and treated off-site and wastewater from commercial establishments ; from non-hazardous industries and from hazardous industries

- **household exclusive pit latrines with a slab** where excreta was stored temporarily and then emptied, transported and treated off- and wastewater from commercial establishments; from non-hazardous industries and from hazardous industries.

*What was safely treated wastewater*

Wastewater treatment, according to WHO (2016a), could be defined as *any process for rendering wastewater fit to meet applicable environmental standards or other quality norms*. At wastewater treatment works, treatment could be categorized into primary, secondary, and tertiary treatment levels, with further categorization by mechanical, biological, and advanced technologies (WHO, 2016b).

The proportion of population with safely treated wastewater is therefore defined as (WHO, 2016b) the fraction of households using a basic sanitation service whose excreta:

- *Are carried through a sewer network to a designated location (e.g. treatment facility) and are treated at a treatment plant to an agreed level; or*
- *Are emptied from septic tanks or latrine pits by an approved method that limits human contact and transported to a designated location (e.g. treatment facility) and treated to an agreed level; or*
- *Are not emptied but stored on site (e.g. in a twin pit latrine) until they are safe to handle and re-use (e.g. as an agricultural input)*.

### 4.1.5 Sustainable Development Related to Access to Basic Services

**Target 1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance**

**Indicator 1.4.1: Proportion of population living in households with access to basic services**

The water supply and sanitation ladder of SDG targets 6.1 and 6.2 had the aim to progressively raise the standard of drinking water and sanitation services for all, to achieve the poverty *SDG 1: End poverty in all its forms everywhere*. There was an immediate priority for many countries, including South Africa, to ensure universal access to at least a basic sanitation, water supply and hygiene service level, i.e. addressing the 'unfinished targets' of the MDG. The target of universal access to basic services would pay particular attention to poor and vulnerable groups (WHO and UNICEF, 2017). For this reason, the JMP would continue to track the population using **basic** drinking water, sanitation and hygiene as well as lower levels of service (WHO and UNICEF, 2017)

Target 1.4 can be deconstructs as shown in Table 25. An important addition to the target (as compared to the MDG) was the need for equity in access to water supply, sanitation and

hygiene to achieve the SDG 1 of ending poverty. Provision of basic service, include water supply, sanitation and hygiene services, would contribute to addressing this goal, as well as to SDG 6. This would require that these services were equitably accessible to all groups of the population irrespective of race, gender, economic status, etc.

Progress towards SDG Target 1.4 is monitored and reported based on two indicators, one of which is ***Indicator 1.4.1: Proportion of population living in households with access to basic services.*** Access to a basic service in this study related to access to a basic water supply, sanitation and hygiene service. These services were a crucial requirement of a basket of basic services which provide a safety-net to poor and indigent households in a country.

*What was access to a basic water supply service*

All three of the JMP services ladders had a 'basic service' level of the ladder. Basic water supply, sanitation and hygiene services on these ladders would require that a household had access to at least *an improved water source that is outside the dwelling, yard or plot but within 30 minutes walking distance of the households* (WHO and UNICEF, 2017). A basic water supply service thus includes (WHO and UNICEF, 2017):

a) piped water within 30 minutes walking distance of the households,
b) boreholes or tubewells within 30 minutes walking distance of the households,
c) protected dug wells within 30 minutes walking distance of the households,
d) protected springs within 30 minutes walking distance of the households, and
e) rainwater within 30 minutes walking distance of the households.

The JMP recognizes that bottled water and tanker truck water can potentially deliver safe water, hence if access to these sources is within 30 minutes walking distance of the households then the household could also be classified has having a basic water supply (WHO and UNICEF, 2017).

A basic water supply service thus has two criteria, namely (1) that the household had access to an improve water source and (2) the water source needed to be within 30 minutes walking distance of the households.

*What was access to a basic sanitation supply service*

Indicator 1.4.1 requires all households to have access to at least a basic sanitation service, which according to the JMP sanitation ladder can be defined as a household with an improved facilities that was not shared with other households but the excreta was not safely managed (WHO and UNICEF, 2017). A basic sanitation service would therefore include households with a:

- wet sanitation technologies of:
    - *household exclusive* flush and pour flush toilet that connected to the sewers,
    - *household exclusive* flush and pour flush toilets that connected to a septic tanks,
    - *household exclusive* flush and pour flush toilets that connected to a to pit latrines,
- dry sanitation technologies of:
    - *household exclusive* ventilated improved pit (VIP) latrine,

- *household exclusive* pit latrine with a slab, and
- *household exclusive* composting toilet.

There are therefore two criteria for a basic sanitation services, namely that the households has access to an improved sanitation facility and secondly, that the facility is not shared with other households, i.e. for the exclusive use of the household.

*What was access to a basic hygiene service*

The JMP hygiene ladder had as the highest level of a hygiene service that of a basic hygiene services, defined as those households with access to a handwashing facility, which had soap and water available on premises. Hence a basic hygiene facility would be (WHO and UNICEF, 2017);

- a sink with tap water on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- devices that contain, transport or regulate the flow of water on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- buckets with tap on the premises that has bar soap, liquid soap, powder detergent or soapy water *AND access water*
- tippy-taps on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*
- portable basins on the premises with bar soap, liquid soap, powder detergent or soapy water *AND access water*

A basic hygiene service thus has three criteria, namely (1) a handwashing facility on the premises (2) soap on the premises and (3) water available.

### 4.1.6 Other Targets in SDG 6

As indicated in Section 4.1.1-4.1.4 above, the WASH SDG 6 indicators comprised multiple components, with multiple levels and types of data required to be able to report each component of the indicator, i.e. safely managed water supply service require data on type of water supply facility; location of water supply facility and quality of water provided by the water supply.

A number of the indicator components were the same across several indicators, and as such, represent a synergy when it comes to data collection (Figure 41) (UN-Water, 2017a). For example, data on type of sanitation facility and excreta management (emptying, transport, treatment, disposal) were used to report both indicator 6.2.1 on adequate sanitation service and SDG Indicator 6.3.1 on wastewater treatment.

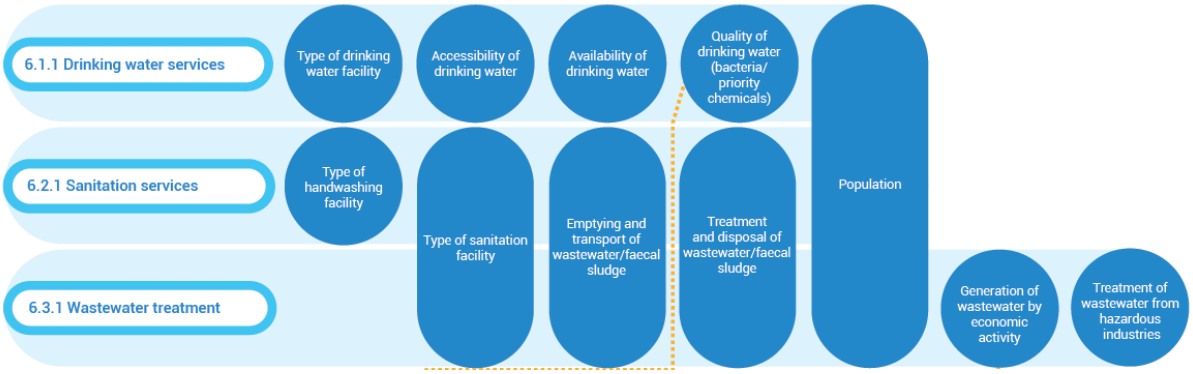


**Figure 41: Overview of WASH indicator components and their interlinkages (taken from UN-Water, 2017)**

Similarly all the SDG 6 targets and indicator had an impact on or impact on the achieving of the WASH SDG targets and indicator (Table 25). For example, progress to achieving SDG 6.4 *by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity*, was impacted by the type and management of water supply services and sanitation services provided in addressing SDG Targets 6.1 and 6.2. Water-use efficiency should thus be a key consideration in the provision of water supply services and sanitation services, with systems which minimise water use by households and other sectors contributing to efficiencies of water use in the municipal sector. Similarly, provision of water supply services to all individuals contributed to reducing the number of people suffering from water scarcity.

Table 25: Linkages between the non-WASH SDG 6 targets and the WASH targets of SDG 6.

| Target | Component | Relevance to WASH |
|---|---|---|
| **SDG 6.4: By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity** | The target contains three elements:<br>• addressing the environment (water withdrawals): monitoring and reporting water available for the environment, leaving enough water at any given moment to sustaining natural processes, for maintaining ecosystem health and resilience (UN-Water 2016).<br>• economic (water-use efficiency): monitoring and reporting water-use efficiency measures such as progress in the levels of output per water input (for example, more crops per cubic meter of water) and reduction in water losses (i.e. reduction in water losses from municipal distribution networks) (UN-Water, 2016b)<br>• social aspects (suffering people) of water scarcity: including monitoring and reporting to ensure enough water for people and the economy. | WASH targets and indicator support the achieving of this target. The type of sanitation and water supply services in targets 6.1 and 6.2 would impact on municipal water use efficiency and thus water scarcity.<br><br>Safely manged water supply and sanitation would also include minimising losses in the supply system, increasing water-use efficiency and thus reducing water scarcity.<br><br>This targets support the achieving of SDG Target 6.1-6.3, as water-use becomes more efficient in a country so the security of essential households water supply would be more secure. |
| **SDG 6.5: By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate** | This SDG target monitored and reported on the levels of coordination of the development and management of water-and land-related resources. Target 6.5 builds on the Johannesburg Plan of Implementation (2002) arising from the United Nations World Summit for Sustainable Development (1992). | Integrated water resource management supports the implementation of all the SDG 6 targets as good management of water resource would promote, through sound management decision-making, the provision of sustainable WASH services. |
| **SDG 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes** | This target had the purpose of tracking and reporting progress in protecting ecosystems by minimising the degradation and destruction to them and to recover those already degraded and destructed (UN-Water, 2016b). | Protecting and restores water resource protect the ecosystem services provided by these water resources, such as good water quality; water available for water supply services and flushing toilets, etc. The achieving of this target thus has a significant impact of addressing the SDG 6 WASH targets. |
| **SDG 6.a: By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies** | Target 6.a sought to monitor and report the extent of expansion of international cooperation and capacity-building support to developing countries (UN-Water, 2016b). Creating an enabling environment was an essential first step for succeeding with the implementation of any management response. | Target 6.a supports the implementation of all SDG 6 targets (6.1-6.6 and 6.b) by promoting the provision of finance and of capacity-building in developing countries. |
| **SDG 6.b: Support and strengthen the participation of local communities in improving water and sanitation management** | Target 6.b aimed for the participation of local communities in water and sanitation planning and management (UN-Water, 2016b). The involvement of relevant stakeholders in the water value chain was important to ensure: that the technical and administrative solutions decided upon were suitable for specific socioeconomic contexts (UN-Water, 2016b). | Target 6.b supports the implementation of all SDG 6 targets (targets 6.1-6.6 and 6.a) by promoting the meaningful involvement of local communities, which is also a central component of IWRM. Participation of communities in WASH decision-making is crucial to the sustainability of the services provided. |

## 4.2 UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) Indicators

The UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) 2017-2020 Strategy had the vision to *accelerate progress towards universal, sustainable access to drinking-water, sanitation and hygiene (WASH) by 2030 as part of the SDGs by monitoring, analysing and disseminating information on the enabling environment established by countries.* GLAAS would focus on collecting, analysing and reporting national-level data on the WASH **enabling environment**, including on objectives, governance, and finance (WHO and UNICEF, 2017a).

The GLAAS 2016/2017 report indicated that to meet the SDG water and sanitation targets, significant investment would be required in terms of both finance and resources (WHO and UNICEF, 2017b). The World Bank had indicated that current levels of WASH financing was not sufficient to address SDG Target 6.1 and Target 6.2 of universal access to water, sanitation and hygiene by 2030. The GLAAS 2016/17 report thus placed significant emphasis on reporting the investment status of water supply and sanitation in countries. The result from WHO-led UN-Water GLAAS TrackFin initiative during 2015 and 2016 were also included in the report (WHO and UNICEF, 2017b).

GLAAS monitoring and reporting, to which South Africa would be committed until 2030, focussed on 4 components of the enabling environment, including (WHO and UNICEF, 2017b):

- WASH Budgets and Plans;
- Expenditure;
- External Support; and
- Improving the Use of Existing Financial Resources.

Each of these component of the enabling environment were measured and monitored through a suite of indicators (Table 26). The indicators in Table 26 were clearly input indicators which measured the inputs required to enable and facilitate the achieving of SDG Target 6.1: water supply and SDG Target 6.2: sanitation and hygiene. The input indicators also addressed some aspects of equity of SDG 6 – namely by measuring financial plans for urban/rural areas countries would be able to determine whether inputs are equitable in urban and rural areas.

**Table 26: GLAAS key indicators for WASH financing (UN-Water and WHO, 2017b)**

| No. | Indicator |
|---|---|
| **WASH Budget and plans** | |
| 1 | Percent (%) of countries reporting existence of a financial plan that is consistently followed for:<br>• Urban/rural sanitation<br>• Urban/rural drinking-water |
| 2 | Percent (%) of countries able to provide WASH budget data |
| 3 | Average of participating governments – percentage (%) annual increase in government WASH budget |
| 4 | Average of participating governments – government WASH budget per capita in US$ |
| 5 | Average of participating governments – government WASH budget as a percentage of GDP |
| **Expenditures** | |
| 6 | Percent (%) of countries able to provide government expenditure data |

| No. | Indicator |
|---|---|
| 7 | Average of participating countries – total WASH expenditure per capita in US$ |
| 8 | Average of participating countries – total WASH expenditure as a percentage of GDO |
| 9 | Percent of WASH expenditure between water/sanitation |
| 10 | Percent of WASH expenditure between urban/rural |
| 11 | Average of participating countries – percentage (%) of WASH financing derived from households |
| **External Support** | |
| 12 | US$ of official development assistance committed (ODA) for water and sanitation in 2015 (constant 2014 US$) |
| 13 | Percentage of total ODA commitments for water and sanitation in 2015 (constant 2014 US$) |
| 14 | US$ of ODA disbursements for water and sanitation in 2015 (constant 2014 US$) |
| 15 | Percent (%) of water and sanitation ODA commitments between water/sanitation |
| 16 | Percent (%) of water and sanitation ODA commitments directed to basic services |
| 17 | Percent (%) of water and sanitation ODA disbursements between urban/rural/combined |
| 18 | Percent (%) of water and sanitation ODA between ODA grants/ODA loans/ non-concessional loans |
| **Improving the Use of Existing Financial Resources** | |
| 19 | Percent (%) of countries with absorption rates greater than 75% for:<br>• Domestic capital commitments<br>• External donor commitments |
| 20 | Percent (%) of countries with cost recovery for O&M more than 80% for:<br>• Urban/rural sanitation<br>• Urban/rural drinking water |
| 21 | Percent (%) of countries indicating that affordability schemes exist and are widely used for sanitation/drinking water |
| 22 | Percent (%) average non-revenue water |

The GLAAS indicators were thus input indicators of the investment required to achieve the outcome indicators of the SDG, i.e. indicators under SDG Target 6.1-6.3 were outcomes indicators of the implementation of WASH initiatives in a country (Figure 42).

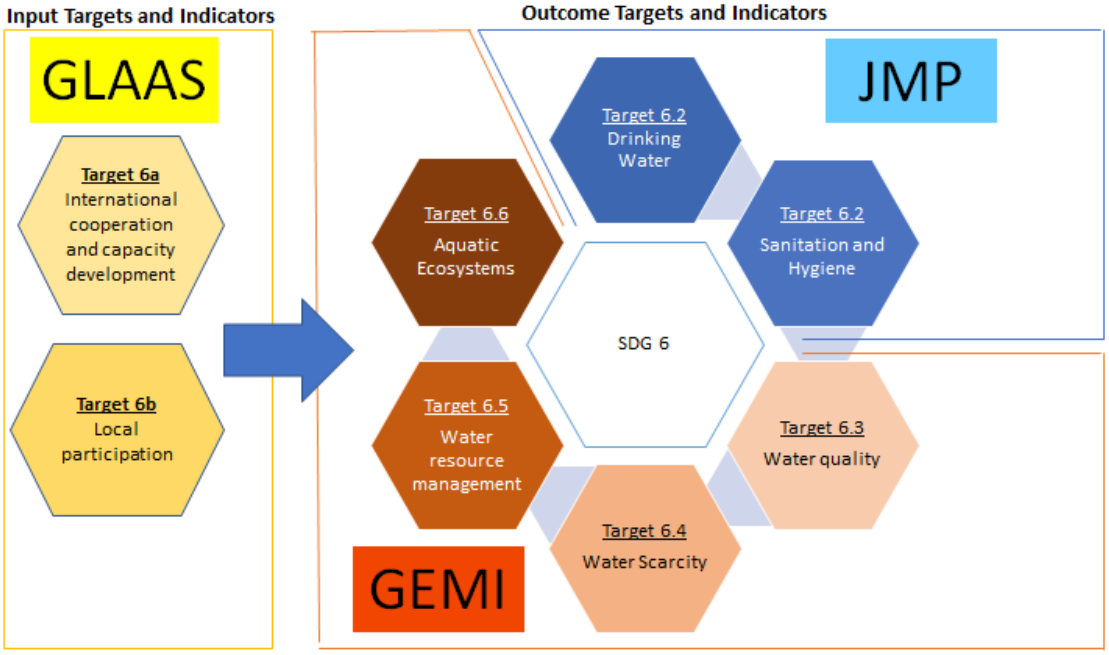


Figure 42: Organization responsible for reporting SDG 6 targets and the type of targets which were reported (adapted from UN-Water 2016)

The GLAAS also assumed responsibility for monitoring and reporting of Targets 6a and 6b of the SDG 6. These targets were measure in the following manner (WHO and UN-Water, 2016):

- Target 6a related to international and cooperation and capacity-building: the indicator which the GLAAS used to report this target was the *amount of water and sanitation related ODA that is part of a government coordinated spending plan* (indicator 12 in Table 25); and
- Target 6b related to participation of local communities: the GLAAS used the indicator *proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management.*

## 4.3 AMCOW WATER SUPPLY, SANITATION AND HYGIENE TARGETS AND INDICATORS

Countries in Africa continued to receive various demands for monitoring and reporting. This had often led to duplication of efforts at various levels, placing further burden on already limited monitoring and reporting resources and capacities. There was recognition that a comprehensive, harmonised approach to monitoring and reporting was required. In response to this need, the AMCOW Secretariat, with support from the African Water Facility (AWF), commenced an initiative for a web-based monitoring and reporting system, designed to provide a response to and follow-up on the political commitments made concerning water and sanitation at the continental level.

Theme 3 of the AMCOW Monitoring and Reporting Framework related to water supply, sanitation, hygiene and wastewater. Within this theme were 4 sub-themes, each addressing one aspect of the main theme (Table 27). The indicators and targets related to each sub-theme were shown by Table 27, which indicated that there was a single water supply target and indicator; two sanitation targets and indicators and one target and indicator for each sub-theme hygiene and wastewater. All these indicators and targets were taken from the SDG targets and indicators.

Indicators within the AMCOW Theme 2: Managing and Protecting Water Resources and Theme 6: Financing also related to water supply and sanitation monitoring and reporting. The Theme 2 indicators and targets focussed on monitoring and reporting reuse and water quality, while the Theme 6 indicators and targets could be directly linked to the GLAAS indicators of monitoring and reporting the enabling finance to facilitate universal and equity access to safely managed drinking water services; sanitation services and hygiene services (Table 27).

South Africa, as a member of AMCOW, would be responsible to monitor and report the WASH indicator shown in Table 27. Since many of these indicators and targets linked directly to other monitoring and reporting initiatives (i.e. SDG monitoring and report), there should be little duplication of monitoring and reporting efforts on the continent. Hence, reporting progress with indicators for one initiative should provide data and information to report progress indicators in other initiatives.

Table 27: Indicators and targets related to AMCOW Theme 3 (taken from UNEP and DHI, 2016)

| Sub-Theme | Indicator | Target | Linked to SDG |
|---|---|---|---|
| **3.1 Water Supply** | I-3.1a: Percentage of population with access to a basic drinking water service | T-3.1: By 2030, achieve equitable access to safe and affordable drinking water for all (SDG-6.1) | Target 6.1: By 2030, Achieve Universal And Equitable Access To Safe And Affordable Drinking Water For All<br><br>Indicator 6.1.1 Percentage of population using safely managed drinking water services |
| | I-3.1b: Percentage of population using safely managed drinking water services (SDG-6.1.1) | | |
| **3.2 Sanitation** | I-3.2a: Percentage of population using safely managed sanitation services (SDG-6.2.1) | T-3.2a: By 2030, achieve access to adequate and equitable sanitation for all, paying special attention to the needs of women and girls and those in vulnerable situations (SDG-6.2) | Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations<br><br>Indicator 6.2.1 percentage of population using safely managed sanitation services |
| | I-3.2b: Percentage of population practicing open defecation | T-3.2b: By 2030, end open defecation | |
| **3.3 Hygiene** | I-3.3: Percentage of population with handwashing facilities with soap and water at home | T-3.3: By 2030, achieve access to adequate and equitable hygiene for all (SDG-6.2) | |
| **3.4 Wastewater treatment** | I-3.4: Percentage of wastewater not safely treated (SDG-6.3.1) | T-3.4: By 2030, halve the proportion of untreated wastewater (SDG-6.3) | Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally<br><br>Indicator 6.3.1 Percentage of wastewater safely treated |
| **Theme 2 Managing and Protecting Water Resources** | | | |
| **2.2 Sustainable Supply** | I-2.2a: Percentage of water recycled and reused = volume of water recycled and reused / total freshwater withdrawal | T-2.2a: By 2030, substantially increase safe reuse of water (part of SDG-6.3). | See 3.4 above |
| **2.3 Water Quality** | I-2.3: Proportion of bodies of water with good ambient water quality (SDG-6.3.2) | T-2.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials (part of SDG-6.3). | See 3.4 above |
| **Theme 6 Financing** | | | |
| **6.1 Financing water supply and sanitation** | I-6.1a: Percent of GDP allocated and disbursed to sanitation and hygiene. | T-6.1a: By 2020, allocate at least 0.5% of GDP to sanitation and hygiene. | GLAAS Indicator |
| | I-6.1b: Percent of national budget allocated to water supply, sanitation and hygiene. | T-6.1b: By 2020, allocate at least 5% of national budget for water supply, sanitation and hygiene. | GLAAS Indicator |
| | I-6.1c: Degree of implementation of | T-6.1c: By 2030, establish sustainable financing | GLAAS Indicator |

| Sub-Theme | Indicator | Target | Linked to SDG |
|---|---|---|---|
| | financing for water supply, sanitation and hygiene | systems for water supply, sanitation and hygiene. | |
| **6.2 Equitable tariff strategies** | I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs. | T-6.2: By 2030, implement water supply and wastewater tariffs that address cross-subsidy and the needs of the poor. | SDG-6.1 & SDG-6.2 |
| **6.4 Non-government financing** | I-6.4: Proportion of water- and sanitation-related official development assistance that is part of a government coordinated spending plan. (SDG-6.a.1) | T-6.4: Expand non-governmental financing in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies | SDG-6a and GLAAS indicator |

## 4.4 National Water Supply, Sanitation and Hygiene Targets and Indicators

From a national perspective, South Africa will in future be reporting a number of water supply, sanitation and hygiene indicators to monitor and report progress in achieving universal access to these services. The section below provides an overview of these national indicator commitments.

### 4.4.1 NDP and MTSF Water Supply, Sanitation and Hygiene Targets and Indicators

As indicated in Section 2.2.8 above, progress with addressing the developmental imperatives of the South Africa National Development Plan was monitored and reported through the MTSF indicators and the indicators and targets within the Performance Agreements linked to each imperative of the plan.

The overarching targets of the NDP were that (Presidency, 2013):

- By 2030, it was envisaged that effective management of water and the services derived from it would support a strong economy and a healthy environment.
- Before 2030, all South Africans would have affordable, reliable access to sufficient safe water and hygienic sanitation.
- the Department of Basic Education had committed itself to eradicating 496 inappropriate structures, providing basic water to 1 257 schools, providing basic sanitation to 868 schools and providing electricity to 878 schools in the 2012/13 financial year.

The water and sanitation MTSF-linked indicators and targets were shown in Table 11 above. Within these indicators and targets a number related to monitoring and reporting universal and equitable access to water supply, sanitation and hygiene services. Table 28 provided these indicators. South Africa will continue to monitor and report these indicators at least until the end of the MTSF (2019). These indicator thus have a time limited, with new or adapted indicators to be added to the MTSF in 2019 after the review and update of the MTSF (2014-2019). Similarly

as the Performance Agreements with Ministers are review and updated, so these indicator may change over time.

It should be noted, that despite the government-wide monitoring and evaluation systems in South Africa being performance-based and the MTSF being the plan to achieve the outcomes of the NDP, the majority of the WASH-related indicators being monitored and reported as part of the MTSF were in fact input or output indicators. They thus monitored and reported on the enabling environment required to achieve WASH goals and targets. Table 28 does however demonstrate that South Africa was already monitoring and reporting a wide range of WASH-related indicators, many of which could inform or could be included in the Monitoring Framework for WASH in South Africa, which was developed as part of this study.

**Table 28: Water supply, sanitation and hygiene indicators in the MTSF**

| Sub-theme | Indicator |
|---|---|
| **Water Supply** | **Indicator 6.2.1.2:** Mokolo Crocodile Water Argumentation Project (MCWAP) Phase 1 |
| | **Indicator 6.2.1.3:** Olifants River Water Resources Development Project (ORWRDP) Phase 2D Bulk Distribution |
| | **Indicator 6.4.1.1** Mzimvubu Water Project 1. TCTA to finalise the funding strategy 2. DWS to direct TCTA to implement the scheme with Eskom to implement the hydro power project, |
| | **Indicator 6.4.2.1** Vaal-Gamagara Bulk Water Supply Scheme – DWS/Sedibeng Water to commence with the upgrading of the Vaal-Gamagara Bulk Water Supply Scheme when funding is secured. TCTA to facilitate with contractual project finance model |
| | **Indicator 6.4.3.1** Mooi-Mgeni Transfer Scheme – TCTA |
| | **Indicator 6.4.4.1** SIP projects implemented according to timeframes and budgets |
| | **Indicator 6.4.4.2** Establish a national water-resources infrastructure agency that owns and support the development of infrastructure and facilitates borrowing, fiscal independence and equity in raw water prices |
| | **Indicator 6.4.4.3** Develop comprehensive investment programme for water-resource development, bulk-water supply and wastewater management, assessing requirements to achieve universal access, including Mzimvubu dam |
| | **Indicator 6.4.4.5** Establish regional water and waste-water utilities to support municipalities: Implementation plan approved, Implementation of approved plan, and quarterly reporting. Percentage of municipalities covered by approved functional regional utilities created |
| | **Indicator 6.4.4.7** Urgent review of water and sanitation norms and standards together with the financial provisions to meet these |
| | **Indicator 6.4.4.8** Additional water supplies for Lephalale area: Mokolo and Crocodile River (West) Augmentation Project phase 1 |
| | **Indicator 6.4.4.9** Investigate and implement water re-use and desalination projects and continue with applied research: Cabinet memorandum on research findings |
| | **Indicator 7.5.1.1:** Number of school infrastructure projects being implemented |
| | **Indicator 7.5.1.2:** Number of education infrastructure projects completed |
| | **Indicator 7.5.2.1:** Number of health infrastructure projects completed |
| | **Indicator 7.5.2.2:** Number of health infrastructure projects being implemented |
| | **Indicator 7.5.4.1:** Number of rural households with access to safe drinking water (in the house, yard and 200 m from the house |
| Sanitation | **Indicator 7.5.6.1:** Number of rural house with access to sanitation services |
| | **Indicator 7.5.6.2:** Number of buckets eradicated in formally established areas |
| Water supply and sanitation | **Indicator 8.1.4.1:** All new developments have basic water, sanitation, roads and energy infrastructure and services |
| | **Indicator 1.2.2.1.** Percentage of schools with adequate infrastructure in line with agreed norms and standards |
| | **Indicator 5.2.2.2:** Costed macro infrastructure maintenance plan for TVET colleges developed |
| | **Indicator 5.3.1.1:** Macro infrastructure plan for the university sector developed |

| Sub-theme | Indicator |
|---|---|
| | **Indicator 2.7.1.1:** Percentage of (health) facilities that comply with gazette infrastructure Norms & Standards |
| | **Indicator 2.7.3.1:** Number of health facilities that have undergone major and minor refurbishment |
| | **Indicator 2.7.4.1:** Number of Provincial Departments of Health that have established Service Level Agreements (SLAs) with Departments of Public Works |
| | **Indicator 9.1.4.1:** Number of municipalities in the 27 priority districts supported to apply mechanisms to provide FBS to indigent households. |
| | **Indicator 9.1.4.2:** Standardised indigent register for provision of free basic services developed |
| | **Indicator 9.1.5.1:** Free Basic Services Programme evaluated |
| | **Indicator 9.1.5.2:** Recommendations of Free Basic Services Programme evaluation implemented. |
| | **Indicator 9.1.5.3:** Implementation of recommendations on Free Basic Services monitored |
| | **Indicator 14.2.6.1:** Municipalities demonstrating gender/poor responsive budgeting |
| | **Indicator 14.2.6.2:** Demonstrable inclusion of the poor in municipal processes |
| | **Indicator 14.4.1a.1:** An interactive municipal specific two way communication mechanism established |
| | **Indicator 14.4.5.1:** Number of Citizen based monitoring programmes/department for departments delivering services directly to the public |

### 4.4.2 Blue Drop, Green Drop and No Drop Water Supply Targets and Indicators

The Blue Drop, Green Drop and No Drop performance management system was an incentive-base system which had the purpose of assessing the effectiveness of Water Services Authorities (WSA) in performing their Constitutional and legislative responsibilities of providing universal access to a safe water supply and hygiene sanitation services to the people within their jurisdiction. The indicators within these certification systems focus largely on assessing the management imperatives which a WSA needed to guarantee safe water and hygiene sanitation services to individuals in their management area. Indicators (shown in Figure 19, 20 and 26 above) were thus largely input or output indicators which measure the state of the enabling management environment to ensure these Constitutional and legislative imperatives.

The 37 performance indicators of the Municipal Benchmarking Initiative (MBI), focussed on monitoring and benchmarking core organisation and operational management parameters which were essential for sustainable water service delivery (SALGA, WRC and IMESA, 2015). Similar to the DWS performance programmes, the majority of indicators in the NBI were input or output indicators. There were a limited number of outcome indicators however, such as percentage of the population with access to water/sanitation.

Table 29 showed the BDS, GDS and NDS outcome indicators which related directly to the provision of universal and equitable access to a safe water supply, sanitation and hygiene service. The indicators in Table 29 could inform or could be included in the Monitoring Framework for WASH in South Africa, which was developed as part of this study.

**Table 29: Water supply, sanitation and hygiene indicators in the BDS, GDS, NDS and MBI**

| Sub-theme | Indicator |
|---|---|
| **Water Supply** | (Blue Drop) Criteria 3: Drinking Water Quality Verification<br>• Microbiological compliance<br>• Chemical Compliance<br>• Operational Compliance |
| | (Benchmarking) KPA 3: Service delivery and backlogs<br>• Indicator 3.1: Access to water |

| Sub-theme | Indicator |
|---|---|
| | (Benchmarking) KPA 5: Product quality<br>• Indicator 5.1: Drinking water compliance – (E.coli / Faecal coliforms) |
| Sanitation | (Green Drop) Effluent Quality Compliance:<br>a) 90% Microbiological Compliance;<br>b) 90% Chemical Compliance<br>c) 90% Physical Compliance |
| | (Benchmarking) KPA 3: Service delivery and backlogs<br>• Indicator 3.2: Access to sanitation |
| Water supply and sanitation | (No Drop)<br>• Calculate the WSI baseline profile for physical water loss status<br>• Calculate the WSI baseline profile for commercial water loss status<br>• Calculate the WSI baseline profile for water use efficiency status |

### 4.4.3 RPMS Water Supply, Sanitation and Hygiene Targets and Indicators

The RPMS tool is a regulatory programme which has the objectives (Selowa, 2014):

- to improve business practice with regard to water services delivery in local government;
- to improve local government compliance with national norms and standards;
- to improve the impact of DWS regulatory processes through ensuring that responses to non-compliance are uniform and standardised across the country;
- to ensure that the data collected from local government is verifiable, accurate and useful to other processes; and
- to improve local government's capacity to deliver services through strategic feedback on problem areas by RPMS.

The RPMS measures Water Service Authorities (WSAs) performance against 11 regulatory KPIs set out in the NWSRS, namely:

- KPI 1: Access to Water
- KPI 2: Access to Sanitation
- KPI 3: Access to Free Basic Water
- KPI 4: Access to Free Basic Sanitation
- KPI 5: Drinking Water Quality
- KPI 6: Wastewater Quality
- KPI 7: Customer Service Standards
- KPI 8: Institutional Effectiveness
- KPI 9: Financial Performance
- KPI 10: Strategic Asset Management
- KPI 11: Water Use Efficiency

The KPIs are measured through various activity categories (or sub-issues), with each component weighted to indicate their overall importance as a sub-issue. The RPMS programme, like the GDS and BDS, is thus a hierarchical performance monitoring system which is utilised to assess the performance of the water sector of South Africa.

At least 5 of the KPIs would contribute to WASH monitoring and reporting in South Africa, namely KPI 1-6 and KPI8. The remainder of the indicator would relate to monitoring of progress in the enabling environment.

### 4.4.4 Financial Water Supply, Sanitation and Hygiene Targets and Indicators

Similar to the financial indicators monitored and reported in GLAAS and AMCOW, the South Africa Treasury monitors and reports financial inputs and outputs required to achieve the country's WASH imperatives. The majority of these indicators were thus input/output indicators, monitoring and reporting the enabling financial environment required to achieve these national imperatives.

### 4.4.5 National Policy Imperatives

South Africa had developed and implemented a number of water supply and sanitation policies since the advent of democracy, including:

- White Paper on Water Supply and Sanitation (1994)
- White Paper on National Water Policy for South Africa (1997).
- White Paper on Basic Household Sanitation (2001)
- National Water Policy Review of 2013

The water policies were legitimised in the late 1990s by the promulgation of two new water Acts, namely the Water Services Act (No. 108 of 1997) and the National Water Act (No. 36 of 1998). The policy and legislative imperatives outline in these policies and Acts guided the monitoring and reporting of WASH in the country between 1994 and 2015 (MDG eras discussed in Section 2.2.). The policy provide the definition of a basic water supply and sanitation service; national targets for WASH and policy positions on WASH issues such as rights, roles and responsible in service provision; financial support for WASH (i.e. subsidies and Free Basic Services); environmental considerations in providing WASH services; community participation in the sector; regulation of the sector, etc. All these policy imperatives determine and thus guided the indicators which were utilised to monitor and report universal access to WASH in the MDG era.

The majority of the policy positions and legislative imperatives had remained unchanged to date. These positions and imperatives would thus continue to determine and guide the indicators which would be utilised to monitor and report universal access to WASH in the SDG era (until 2030).

The DWS however, gazetted a new National Sanitation Policy for South Africa in 2016 (DWS, 2016) which provided additional and amended policy positions and thus suggestion of new indicators which would need to be monitored and reported in future. Key amended policy positions which would impact on the monitor and report of WASH imperatives in future.

A rapid review of the National Sanitation Policy (2016) indicated that the policy focussed on 7 pillars required to ensure hygienic, sustainable, equitable and efficient sanitation services (Figure 43).

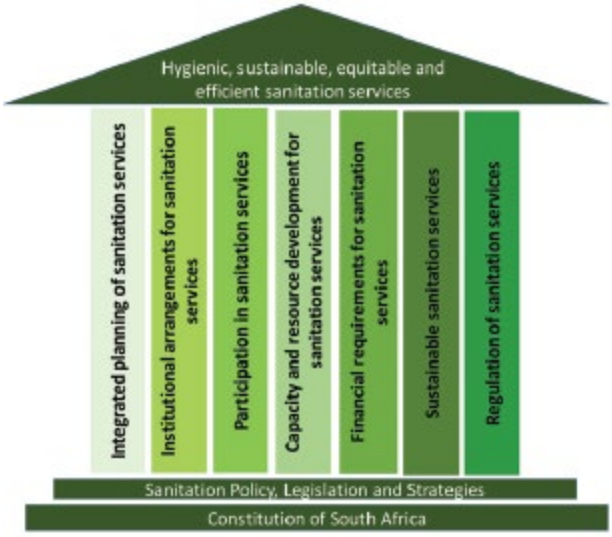


Figure 43: Pillars of sustainable services (taken from DWS, 2016)

The seven pillars of the national sanitation policy review, articulated 32 Policy Positions which address gaps in the current sanitation policy. It should be noted that the National Sanitation Policy (2016) had the purpose of addressing the gaps in current policy, with all the policy positions in the 1994; 1997 and 1998 policy which are not address in the 2016 policy still remaining valid.

Table 30 below links SDG future requirements with the sustainability pillars of the new National Sanitation Policy. Many of these policy positions would determine and guide the WASH indicators which would be monitored and reported in South Africa in future. Within the policy document were also the updated definitions of water and sanitation services, with these having been updated and refined to address issues such as the inclusion of handwashing facilities as part of sanitation; definitions of reuse and recycling in the WASH sector and levels of services which would be acceptable in various localities in the country, i.e. informal settlements; emergency settlements, etc.

Table 30: Links between the 'SDG 6 components and the pillars of sustainable sanitation found in the new National Sanitation Policy (DWS, 2016)

| Requirements to achieve the "Water is Gold" desired future | National Sanitation Policy Pillar of Sustainability |
|---|---|
| **Universal and equitable access to safe and reliable water supply** | • Policy Position 1: Universal Access to Sanitation in Human Settlements |
| **Universal and equitable access to safe and reliable sanitation** | • Policy Position 1: Universal Access to Sanitation in Human Settlements<br>• Policy Position 2: Free Basic Sanitation<br>• Policy position 17: Gender, youth and disabled in sanitation services<br>• Policy position 24: Appropriate sanitation technologies<br>• Policy position 16: Ownership of sanitation services<br>• Policy position 29: Labour intensive sanitation services provision<br>• Policy position 28: Operation and maintenance<br>• Policy position 23: Funding of operation and maintenance of sanitation services<br>• Policy position 3: Sanitation at public and private institutions |

| | |
|---|---|
| **A water security in the country** | • Policy Position 1: Universal Access to Sanitation in Human Settlements<br>• Policy Position 2: Free Basic Sanitation<br>• Policy position 4: Emergency sanitation<br>• Policy position 5: Sanitation during disaster |
| **Water is affordable** | • This is one of the pillars of the policy including the policy positions:<br>• Policy position 21: Economically and financial sustainable sanitation services<br>• Funding models of sanitation services<br>• Policy position 23: Funding operation and maintenance of sanitation service<br>• Policy Position 2: Free Basic Sanitation |
| **Population have knowledge and acknowledge the value of water and are paying for water** | • Policy position 17: Gender, youth and disabled in sanitation services<br>• Policy position 14: Hygiene education<br>• Policy position 15: End-user education<br>• Policy position 20: Community capacity to participate in sanitation services |
| **Good water use behaviour** | • Policy position 17: Gender, youth and disabled in sanitation services<br>• Policy position 14: Hygiene education<br>• Policy position 15: End-user education<br>• Policy position 20: Community capacity to participate in sanitation services |
| **Water efficient population and institutions** | • Policy position 25: Greywater management in sanitation service provision<br>• Policy Position 26: Reduce, reuse, recycle, recover and reclamation in the sanitation sector<br>• Policy position 27: Effluent management |
| **Water recycling and reuse** | • Policy position 25: Greywater management in sanitation service provision<br>• Policy Position 26: Reduce, reuse, recycle, recover and reclamation in the sanitation sector<br>• Policy position 27: Effluent management |
| **Water quality of resources is protected** | • Policy position 27: Effluent management |

## 4.5 THE INTERNATIONAL AND SOUTH AFRICAN WASH MONITORING INSTITUTION

Noting the above monitoring imperatives for the water sector of South Africa, it is important to note the monitoring mandates and responsibilities of the various water institutions both internationally and within the country. Both the international and national SDG 6 monitoring and reporting institution was completed, with the international institution comprising the JMP for Water Supply and Sanitation comprising the WHO and UNICEF, the Integrated Monitoring initiative (GEMI) and UN-Water Global Analysis and Assessment for Sanitation and Drinking-Water (GLAAS). Similarly, there were three key institutions which were responsible for monitoring of water resources and supply in the country at a national level, namely:

- Department of Water and Sanitation
- Department of Performance Monitoring and Evaluation
- Statistics South Africa

It should be noted that the monitoring and reporting of the WASH indicator in Goal 1 and Goal 4 of the SDG are the responsibility of a suite of other international and national institutions. Goal 1 related to poverty remains the responsibility of StatsSA; while Goal 4 on education was the responsibility of the Department of Education and StatsSA.

### 4.5.1 International Institution for Monitoring and Reporting SDG 6

Whereas the water supply and sanitation MDG targets and indicators were monitored and reported by the JMP for Water Supply and Sanitation, the intention with the SDG 6 targets and indicators was that the Joint Monitoring Programme (WHO and UNICEF), the Integrated Monitoring initiative (GEMI) and UN-Water Global Analysis and Assessment for Sanitation and Drinking-Water (GLAAS) would be progressively aligned to ensure a coherent SDG 6 monitoring framework, and together, they would be able to monitor progress towards the entirety of SDG 6 (UN-Water, 2015). Figure 44 showed that the global Target 6.1 and 6.2 would be monitored and reported by the JMP, global Targets 6.3-6.6 would be the responsibility of GEMI and global Targets 6a and 6b would be the responsibility of GLAAS.

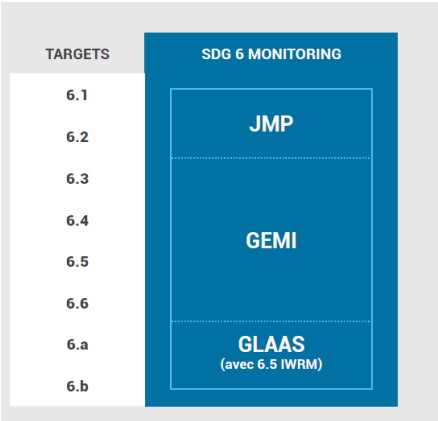


Figure 44: Initiatives responsibilities for monitoring and reporting the water and sanitation targets of the SDG (taken from UN-Water, 2016b)

### 4.5.2 Water Supply and Sanitation Monitoring Mandate of DWS

The DWS mandate related to monitoring and reporting for the water sector of the country was outlined in the 1994 and 1997 White Papers. The 1994 White Paper for Water Supply and Sanitation indicated that an important function of the Central Government was, whilst devolving implementation of water supply and sanitation to the lowest level possible, the monitoring, auditing and reporting of the sector (DWAF, 1994).

The National Water Services Act (Act No. 108 of 1997), which legislated the monitoring, recording, assessing and dissemination of information mandates for the water service sector of South Africa, indicated in Section 62 that the Minister and the Province must monitor the performance of every water services institution in the country to ensure:

a) compliance with all applicable national standards prescribed under the Act;
b) compliance with all norms and standards for tariffs prescribed under the Act: and
c) compliance with every applicable development plan, policy statement or business plan adopted in terms of the Act.

The DWS mandate for the monitoring and reporting of the progresses and performance of the water sector of the country thus emanates from the water policy and legislation of the country. The Minister was tasked with providing information and data on the sector on an ongoing bases.

Sections 27 of the Act also mandated that every water service authority must monitor the performance of water services providers and water services intermediaries within its area of jurisdiction. Section 62 of the Act required that every water services institution must:

a) furnish such information as maybe required by the Minister after consultation with the Minister for Provincial Affairs and Constitutional Development; and
b) allow the Minister access to its books, records and physical assets to the extent necessary for the Minister to carry out the monitoring functions.

The DWS had thus introduced and continues to report through the BDS, GDS, RMPS and NDS on the performance and progress in addressing water services mandates in the country.

DWS was responsible to collect relevant data to report future monitoring imperatives, including the SDGs. DWS would provide these data to the DPME and StatsSA as needed to report the relevant national and international indicators. StatsSA would on the other hand, assist the DWS to collect and report any indicators deemed necessary for the Minister to fulfil their water service monitoring and reporting mandate.

DWS had allocated monitoring and reporting responsibility of each of the SDG 6 indicators to a specific unit within the department. The units were those which were best suited and capacitated to monitor and report the indicator, i.e. indicator on water quality were assigned to the unit responsible for water quality, sanitation to the sanitation unit, etc. Each indicator is overseen by a Task Team, including one which provides oversight over monitoring and reporting of SDG 6.

### 4.5.3 Water Supply and Sanitation Monitoring Mandate of DPME

The mandate of the Department of Planning, Monitoring and Evaluation (DPME) was derived from Section 85(2) of the Constitution of the Republic of South Africa. The DPME, established in 2010 to address the Constitutional monitoring and evaluation mandate of government, thus had the following key mandates (DPME, 2015):

- Facilitate the development of plans or delivery agreements for the strategic cross cutting priorities or outcomes of government
- Monitor the implementation of these plans
- Assess departmental strategic plans and Annual Performance Plans to ensure alignment with long term and short term plans
- Monitor the performance of individual national and provincial government departments and municipalities
- Monitor frontline service delivery
- Carry out evaluations
- Promote good planning and M&E practices in government.

The monitoring and reporting priority of the DPME was the coordinating and monitoring the implementation of the NDP. Since the key instrument that is use to implement the NDP is the 2014-2019 Medium Term Strategic Framework (MTSF), the DPME would focus on monitoring and reporting the indicators of the MTSF and thus progress in addressing the NDP output and outcome indicators.

The DPME was thus task with monitoring and reporting the water service objectives and outcomes of the NDP and MTSF. Data for these indicators would usually provide to the DPME by the DWS and StatsSA.

### 4.5.4 Water Supply and Sanitation Monitoring Mandate of Statistics South Africa

As South Africa's official statistics agency, StatsSA was mandated by the Statistics Act, Act No. 6 of 1999 to coordinate the production of national statistics by implementing a national statistics system. StatsSA was accountable to the Minister in the Presidency responsible for National Planning, Monitoring and Evaluation, Youth and Statistics South Africa.

The department lead South Africa's statistical system by collaborating with stakeholders and providing official statistics. Statistical information for the country was collected through either surveys/censuses conducted mostly by StatsSA or administrative records maintained by line ministries such as the DWS.

StatsSA was the national coordinator of the SDG reporting process, culminating in the production of the country report on progress toward achieving the goals. With the advent of these goals, Statistics South Africa indicated that the Statistics Act was poised for a revamp (StatsSA, 2015). The review and amendment of the Act was expected to see a transformed statistics system which would be driven by the National Development Plan and the United Nations Sustainable Development Goals agenda.

Figure 45 shows that StatsSA would report all SDG indicators, collecting data from data producing agencies. DWS and DPME water service monitoring and reporting would contribute to and support the StatsSA SDG monitoring and reporting efforts.

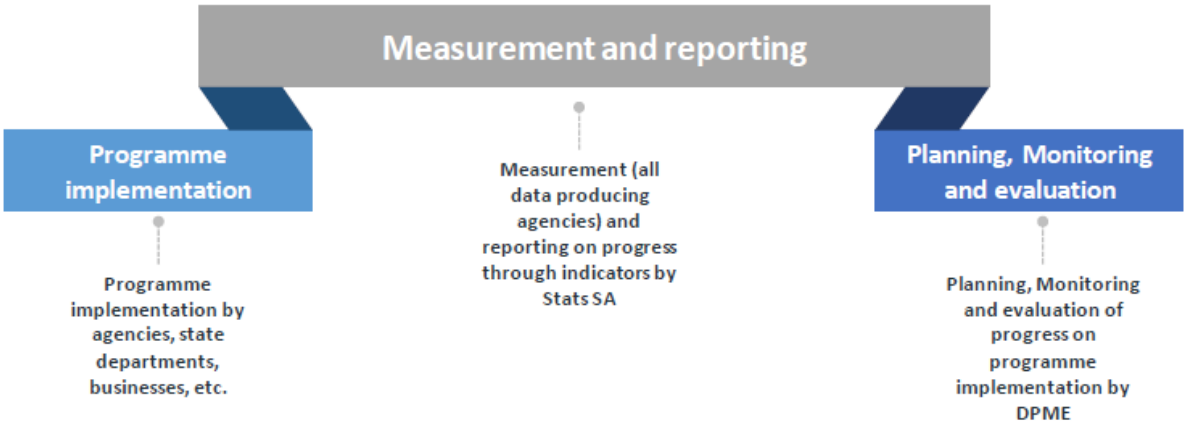


Figure 45: SDG monitoring and reporting hierarch of StatsSA (taken from Lehohla, 2017)

# 5 GAPS IN WATER, SANITATION AND HYGIENE MONITORING AND REPORTING SDG TARGETS

Section 4.1 above provided the UN-Water's interpretation of the component of each of the WASH indicator for SDG 6. SDG 6 had the ambition of ensuring availability and sustainable management of water supply, sanitation and hygiene. In monitoring progress towards this goal, the Monitoring Frameworks for WASH in South Africa, developed in the study, assumed that by achieving universal and equality access to safe and affordable drinking water, access to adequate and equitable sanitation and hygiene and improving water quality by halving the proportion of untreated wastewater and increasing recycling/safe reuse that individuals, the global community would have available and sustainably managed water and sanitation. This was in fact a fair assumption to make, as achieving the SDG target would more than likely result in all people having access to safely managed water, sanitation and hygiene services which were sustainably managed.

However, in linking the individual SDG WASH indicators to their relevant SDG targets it was clear that indicator 6.1.1-6.3.1 were only monitoring and reporting specific components of the particular target. For example, Indicator 6.1.1., which focussed on monitoring the population using safely managed drinking water, did not address the "affordability" component of Target 6.1. To comprehensively monitoring and report progress towards Target 6.1, an indicator which monitored progress in achieving access to affordable drinking water was required.

There were therefore gaps in the future monitoring and reporting of WASH (post-2015) outlined in Section 4 above. This section of the report provides an overview of these gaps by assessing the SDG WASH Indicator against the components required to comprehensively monitor and report the linked SDG Target.

## 5.1 GAPS IN MONITORING OF SDG TARGET 6.1: BY 2030, ACHIEVE UNIVERSAL AND EQUITABLE ACCESS TO SAFE AND AFFORDABLE DRINKING WATER FOR ALL

The first of three WASH targets in SDG 6 was that of achieving universal and equitable access to safe and affordable drinking water for all (SDG Target 6.1) by 2030. The UN-Water (2016) deconstructs this SDG target as shown in Table 31.

Table 31: Normative interpretation of SDG target 6.1 (taken from UN-Water 2016)

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| By 2030, achieve **universal** | Implies all exposure and settings including households, schools, health-care facilities and workplaces | Section 5.1.1.1 |
| And **equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | Section 5.1.1.2 |
| **Access** | Implies sufficient water to meet domestic needs is reliable available close to home | Section 5.1.1.3 |
| **To safe** | Safe drinking water is free from pathogens and elevated levels of toxic chemicals at all times | Section 5.1.1.4 |
| **An affordable** | Payment for services does not present a barrier to access to or prevent people from meeting basic human needs | Section 5.1.1.5 |
| **Drinking water** | Water used for drinking, cooking, food preparation and personal hygiene | Section 5.1.1.6 |

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| **For all** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | Section 5.1.1.7 |

The progress towards achieving SDG Target 6.1 was based on the monitoring and reporting of a single indicator, namely *Indicator 6.1.1 Proportion of population using safely managed drinking water services*. This implied that through an improvement in this indicator, that the target would be achieved by 2030. Clearly, as indicated above, the indicator only focussed on monitoring and reporting some of the components of the SDG Target (i.e. safely managed drinking water service), and did not address other aspects of the target (i.e. equity; affordability). Each component of Target 6.1 was discussed in more detail in the section below and reviewed against the monitoring and reporting capability of the current SDG Indicator 6.1.

### 5.1.1 Monitoring "Universal" Access to Drinking Water:

Universal access to drinking water implied, according to UN-Water (2015b), that drinking water was accessible at all exposure and settings including households, schools, health-care facilities and workplaces. New to the drinking water target, as compared to the MDG drinking target, was the need to achieve this **universal** access to improved drinking water, namely individuals should be able to access improved drinking water at all sites of daily activities such as at home, schools, health-care facilities and in their workplace (UN-Water, 2015).

Universal access to a safe drinking water source, which was a requirement to achieve Target 6.1, would not be monitored by *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* if this indicators was to be monitored in the same manner as the MDG indicator. The MDG indicator only reported access of individuals to drinking water at a household level. Hence, if the SDG indicator 6.1.1 followed this monitoring norm, only one aspect of "universal" access would be monitoring and reported for the SDG.

The UNICEF and World Health Organization (2017) indicated that monitoring SDG targets for universal access *means looking beyond the household and addressing WASH in institutional settings and public spaces. It outlines proposed indicators for monitoring WASH in schools and in health care facilities.* The JMP recommended expanding the monitoring and reporting requirements of SDG Target 6.1 to include WASH in institutional setting. Recommendations were that monitoring and reporting of WASH in schools and health care facilities be prioritised, expanding in future to include WASH in other institutional settings (WHO and UNICEF, 2017).

The JMP had thus, provided a three WASH service ladders for schools – water, sanitation and hygiene-, which would enable countries to track progress towards SDG *Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.* Target 4.a. was expected to be tracked through the monitoring and reporting of a single indicator, namely SDG Indicator 4.a.1: *Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities**; (e) basic drinking water**; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)*. The foci of the water supply service ladder for schools was thus to ensure schools had at least access to a **basic** drinking water supply service, defined as *drinking water from an improved source is available at the school* (Figure 46).

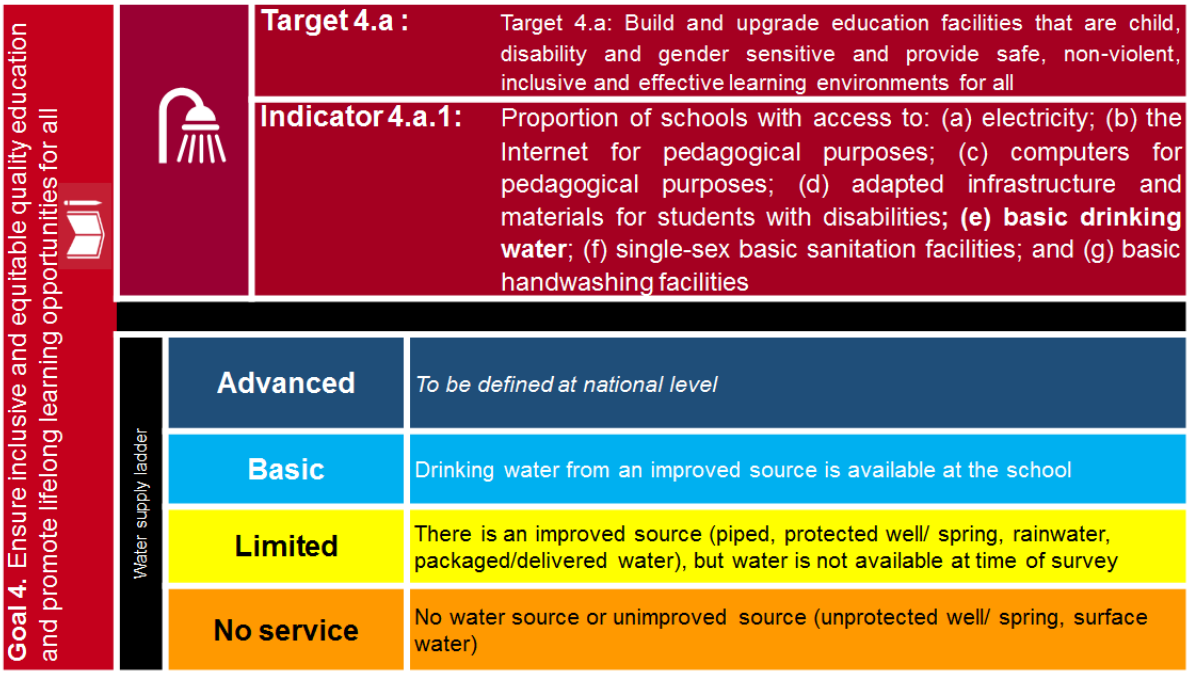


Figure 46: JMP water supply service ladder for schools (taken from WHO and UNICEF, 2017)

In countries where **basic** services was already available at all schools, the country would need to define an **advanced** level of service to which it would strive (WHO and UNICEF, 2017). Criteria for an advanced level could include additional elements to those in the 'basic level' such as the quality of drinking water.

Water supply services in health care facilities, as recommend by the UNICEF and World Health Organization (2017), followed similar requirements as for schools. The JMP recommends four service ladders for WASH in health care facilities – water, sanitation, hand hygiene, and health care waste – that each focussed on conditions in the outpatient setting. Figure 47 showed the water service ladder for WASH in health care facilities (WHO and UNICEF, 2017). As with schools, countries would strive for a **basic** level of water supply at health care facilities but where a **basic** services are already the norm, a country-defined **advanced** service level should be the foci (WHO and UNICEF, 2017)

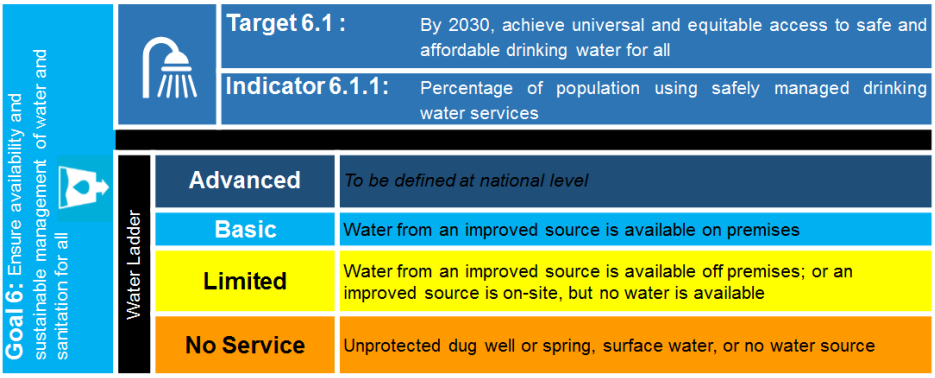


Figure 47: JMP service ladders for monitoring WASH in health care facilities

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* monitors all the aspects of "universal" access to a safely managed drinking water supply which was required to achieve SDG Target 6.1, **if** the indicator monitored access at all sites of daily activities such as at home, schools, health-care facilities and in the workplace

### 5.1.2 Monitoring "Equitable" Access to Drinking Water

Equity in access to drinking water, according to UN-Water (2015b), was defined as the *progressive reduction and elimination of inequalities among population subgroups.*

The Millennium Development Goal (MDG) framework did not have a target related to discrimination and inequalities in water supply. An important addition to the SDG Targets (as compared to the MDG) was the need for equity in access to water supply, which implied that water supply was equitably accessible to all groups of the population irrespective of race, gender, economic status, etc. This did not imply that all households would receive the same levels of service, but rather that water supply (of various levels) would be equitability available to all individuals.

With recognition in 2010 by the United Nations General Assembly and the Human Rights Council of the human right to water and sanitation, the Special Rapporteur for the UN highlighted the need to ensure that this human right was address in a non-discriminatory manner (UNECE and WHO, 2013; UN Special Rapporteur, 2014). Box 1 provides the Special Rapporteur for the UN's definition of equity, indicating the need to address disadvantaged and the poor individuals and groups when ensuring access to water supply.

**Box 1: Definition of equity from the UN (UN Special Rapporteur, 2014)**

Equity: The moral imperative to dismantle unjust differences, based on principles of fairness and justice. It requires a focus on the most **disadvantaged** and the **poorest individuals and groups**. From a human rights perspective, relying on equity carries risks because its definition is malleable and not legally binding. Equity may dilute rights claims if considered separately from equality and non-discrimination.

Targets and indicators formulated with the aim of elucidating inequalities in safe and affordable drinking water supply services would shine a powerful light on areas that need change and would ensure that WASH monitoring was in line with the human rights imperative to overcome inequalities wherever they occur.

Equitable access to a safe drinking water source, which was a requirement to achieve SDG Target 6.1, was not monitored by *SDG indicator 6.1.1 proportion of population using safely managed drinking water services*. The question remained on how to measure this component of the SDG 6.1 target. Kayser et al., (2013) indicated that to measure water supply improvement of a specific group, such as the indigent or a group which was discriminated against, could be a means of monitoring improvement in water supply equity. Recent research had utilized the basic principles of human rights to develop an equity index, using rates of change compared to a benchmark rate rather than levels of achievement, to measure progressive realization for the human right to water and sanitation for each country. The UNECE and WHO (2012) provide a checklist of 10 considerations in developing this framework for equitable access to water supply and sanitation. This checklist concurs with

the UNECE and WHO (2013) Equity Scorecard, which had a number of measure of equity that were utilised to determine the level of equity in a country's water supply and sanitation sector.

South Africa, although having equity as a cornerstone of the Constitution and water policy and legislative environment, had not focussed these equity efforts in the water supply and sanitation sector and did not place efforts on viewing this sector through an equity lens. Before the country could focus their efforts to report on the SDG equity targets for the sector, it was necessary to reflect on equity mechanisms and efforts of the sector and to develop strategic objectives and targets for the country related to equity in water supply and sanitation. Hence, based on the Equity Scored of the UNECE and WHO (2013), South Africa would firstly need to ensure the equity efforts in the water supply and sanitations sector become a core strategy of the sector, developing a strategic plan, targets, ring-fenced financial allocations and a rights-based process to address equity in this sector.

SDG Target 1.4. *By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well* ***as access to basic services****, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance* addressed equity issues in the water sector, to some extent (See Section 4.1.5 for more discussion)

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* did not monitor the "equitable" component of SDG Target 6.1. Future monitoring of SDG Target 6.1 must find a means to monitor and report this aspect of the target. If equity in access did not become the norm in monitoring and reporting progress towards the target, the globe will only achieve universal access to safe and affordable drinking water for all and not universal **and equitable access** to safe and affordable drinking water for all

### 5.1.3 Monitoring "Access" to Drinking Water

Access to a drinking water supply by definition implied sufficient water to meet domestic needs, which was **reliable available** close to home (UN-Water, 2016b) . The UNSD defines access as (UNSD, 2016):

a) using an **improved drinking water source**
b) which is **located on premises**
c) **available when needed**

To truly monitor reliable availability of a safely managed water supply service, access included three of the five dimensions that are required under the human right to water:

a) **Accessibility** – physically and proximally. Physical accessibility means a water source which was easily accessed, while proximal accessibility, in the AMCOW definition of the target, could be defined as *the total collection time must be 30 minutes or less for a roundtrip, including queuing* (AMCOM, 2016). *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* currently monitors both aspects of accessibility as the SDG Target 6.1 required that the improved drinking water supply be located on the premises of use. This concurs with the South Africa National Water Policy Review's 2013 definition of a basic water supply services, which was a source at the boundary of the property (DWA, 2013b). This proximity sub-indicators could also be

utilised as a proxy for physical access to an improved water supply as the assumption could be made that a supply within the yard or household would be accessible to the household.

b) **Availability –** sufficient and continuous supply**.** The UN Rapporteur for Water (UN, 2014), indicated availability of water as *sufficient* water and *continuous supply* of drinking water. For the purpose of SDG monitoring, the JMP focussed on the amount of time when water was available (hours of service per day), namely the continuous supply of drinking water. Within the South African policy context a continuous supply of drinking water would be that the water was available for at least 350 days per year and not interrupted for more than 48 consecutive hours per incident. The SDG Indicator 6.1.1. did not directly address the "sufficient" water aspect of accessibility, which in the South African policy context would be the delivery of 25 litres per person per day and had a flow rate of water from the outlet of not less than 10 litres a minute. The assumption could however be made that if the source was on the premises the drinking water source has been designed to provide at least 25 litres per person per day. The 'located on premise' component of a definition of a safely managed water supply service could be used as a proxy for 'sufficient' water.

c) **Acceptability** – The final aspect of access was that of **acceptability** of the drinking water source. The simplest manner of monitoring and reporting this component of the human right to water was to monitoring the aesthetics of the water supplied to the households. The definition of a basic water supply in South Africa does address this aspect, indicating that a water supply should taste, smell and look acceptable to an individual (South Africa, 1994).

The current UNSD definition of access in *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* only address two of the above access dimensions, namely available and accessibility. Acceptability was not included in the requirements of the indicator.

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* monitors some of the aspects of "access" component required to achieve SDG Target 6.1, namely:

- Physical and proximal accessibility to the drinking water supply
- Continuous availability of the drinking water supply

The aspects of 'access" which were not monitored by the indicators included:

- Sufficient availability of the drinking water supply
- Acceptability of the drinking water supply

### 5.1.4 Monitoring "Safe" Drinking Water

Safe drinking water, according to UN-Water (2015), was a drinking water source which was free from pathogens and elevated levels of toxic chemicals at all times. Monitoring safely managed water thus included that drinking water was **free of faecal (and priority chemical) contamination**.

Adding the safety requirement in the SDG required that the drinking water source no only be an improved source but also that this drinking water source provided water which met water

quality standards. At an international level this would require a drinking water source which met WHO guideline values for pathogen and toxic chemical levels at all time.

In the South African context, the country had adapted the WHO water quality guidelines to address country water quality requirements, outlined in the SANS 241 Standards. The South African National Standard (SANS) 241 Drinking Water Specification was the definitive reference on acceptable limits for drinking water quality parameters in South Africa and provided limits for a range of water quality characteristics (DWS, 2014). The SANS 241 Drinking Water specification effectively summarises the suitability of water for drinking water purposes by specifying a single class of water which is acceptable for lifetime consumption (DWS, 2014).

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* did monitor the "safe" aspects required to achieve SDG Target 6.1

### 5.1.5 Monitoring "Affordable" Drinking Water

Affordable drinking water, as required to achieve Target 6.1, implied that payment for *services does not present a barrier to access to or prevent people from meeting basic human needs* (UN-Water, 2015). The human rights to water and sanitation place obligations on States to ensure that services are affordable (UN, 2014)

The UNICEF and World Health Organization (2017) indicated that *while affordability is an important consideration for all households, regardless of service level, there is no commonly agreed-upon way to measure it*. The JMP together with the World Bank, academics and others were developing and testing indicators that would enable more systematic and consistent monitoring of affordability in the future. One indication which was currently utilised as a proxy for affordability by many countries was the proportion of the household budget spent on water, sanitation and hygiene. Governments and international agencies recommend an affordability threshold of between 2 and 6 per cent of total expenditure (WHO and UNICEF, 2017).

According to UNECE and WHO (2013) affordability could be estimated by considering (a) the financial means that have to be reserved for fulfilling other basic needs and purposes and (b) the means available to pay for water and sanitation services. The affordability of water was thus not just a matter of water tariff levels but could be linked to five variable, namely (UNECE and WHO, 2013):

- income level and income distribution
- cost of provision in a given country or area
- subsidy policies
- tariff policies in place
- individual behaviour of users in terms of water consumption

Compliance with national affordability indicators does not only required that indigent households have affordable access to drinking water but that an active policy was being implemented to this affect. Affordability was not only an economic and equity issue, it was also a social protection issue that required incorporating water and sanitation aspects within social policy discussions (UNECE and WHO, 2013).

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* did not monitor the "affordable" component required for SDG Target 6.1. Future monitoring of SDG Target 6.1 must find a means to monitor and report this aspect of the target by 2030. If affordable access did not become the norm in monitoring and reporting progress towards this target, the globe will only achieve universal and equitable access to safe drinking water for all and not universal and equitable access to safe **and affordable** drinking water for all

### 5.1.6 Monitoring "Drinking Water for All"

The SDG Target 6.1 refers to drinking water which was defined *as water used for drinking, cooking, food preparation and personal hygiene,* not just for drinking as implied by the term. The 'for all' phrase in the target was defined as water suitable for use by men, women, girls and boys of all ages, including people with disabilities, linking to the equitable and universal access component of SDG target 6.1.

**Summary:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* did not monitor the "drinking water for all" component to a safely managed drinking water supply aspect of SDG Target 6.1. Future monitoring of SDG Target 6.1 must find a means to monitor and report this aspect of the target.

### 5.1.7 Summary of Component of SDG Target 6.1 which were monitored and reported by SDG Indicator 6.2.1.

As shown in the previous section, only some of the component of the **SDG Target 6.1: By 2030, Achieve Universal And Equitable Access To Safe And Affordable Drinking Water For All**. A summary of the components which were or were not report by SDG Indicator 6.1.1 was shown in Table 32.

Table 32: Component of SDG Target 6.1 which were monitored and reported by SDG Indicator 6.1.1. (√ = component fully reported by the indicator; X = component not reported by the indicator; Some = some aspects of the component reported by the indicator)

| Target Text | Normative interpretation | Element address by current Indicator 6.1.1. | Gap in current Indicator 6.1.1. | Reported by the Indicator |
|---|---|---|---|---|
| ***By 2030, achieve universal*** | Implies all exposure and settings including households, schools, health-care facilities and workplaces | Monitors access of individuals at a households setting | Does not monitor and report access at schools, health facilities, workplaces and public spaces | **Some** |
| ***And equitable*** | Implies progressive reduction and elimination of inequalities among population subgroups | | Does no current disaggregated access to show reduction and elimination of inequalities among population subgroups. The indicator for SDG 1 – access to basic service does provide an indication of inequality (proxy indicator) | **X** |
| ***Access*** | Implies sufficient water to meet domestic needs is reliable available close to home | Does monitor and report water that is reliably available close to home | Does not monitor or report sufficiency or acceptability of water to meet domestic needs | **Some** |
| ***To safe*** | Safe drinking water is free from pathogens and | Does monitor and report the safety of drinking water, i.e. | Does not currently monitor and report safe drinking water that is | √ |

| Target Text | Normative interpretation | Element address by current Indicator 6.1.1. | Gap in current Indicator 6.1.1. | Reported by the Indicator |
|---|---|---|---|---|
| | elevated levels of toxic chemicals at all times | drinking water is free from pathogens at all times | free from elevated levels of toxic chemicals at all times | |
| ***An affordable*** | Payment for services does not present a barrier to access to or prevent people from meeting basic human needs | | Does not currently monitor and report this component | **X** |
| ***Drinking water*** | Water used for drinking, cooking, food preparation and personal hygiene | Does monitoring and report water used for drinking, cooking, food preparation and personal hygiene | | √ |
| ***For all*** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | | Does not currently monitor or report the suitability for use by men, women, girls and boys of all ages, including people with disabilities | **X** |

## 5.2 GAPS IN MONITORING OF SDG TARGET 6.2: BY 2030, ACHIEVE ACCESS TO ADEQUATE AND EQUITABLE SANITATION AND HYGIENE FOR ALL AND END OPEN DEFECATION, PAYING SPECIAL ATTENTION TO THE NEEDS OF WOMEN AND GIRLS AND THOSE IN VULNERABLE SITUATIONS

The second target of Goal 6 of the SDGs is *SDG 6.2, by 2030, achieve **access** to **adequate** and **equitable sanitation** and **hygiene** for all and **end open defecation**, paying special attention to the needs of **women and girls** and those in **vulnerable situations***. The UN-Water (2016) deconstructs this SDG target as shown in Table 33.

Table 33: Normative interpretation of SDG target 6.2 (taken from UN-Water 2016)

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| By 2030, achieve **access** | Implies facilities close to home that can be easily reached and used when needed | Section 5.2.1 |
| To **adequate** | Implies a system that hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site | Section 5.2.3 |
| And **equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | Section 5.2.2 |
| **Sanitation** | The provision of facilities and services for safe management and disposal of human urine and faeces | Section 5.2.4 |
| And **hygiene** | See Section 4.3 below | Section 4.3 |
| **For all** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | Section 5.2.2 |
| And **end open defecation** | Excreta of adults and children are deposited (directly or after being covered by a layer of earth) in the bush, a field, a beach or any open area, discharged directly into a drainage channel, river, sea or any other body, or are wrapped in temporary material and discarded | Section 5.2.7 |
| Paying special attention to the **needs of women and girls** | Implies reducing the burden of water collection and enabling women and girls to manage sanitation and hygiene needs with dignity. Special attention should be given to the needs of women and girls in high-use settings such as schools and workplaces, and high-risk setting such as health-care facilities and detention centres. | Section 5.2.8 |

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| And those in **vulnerable situations** | Implies paying attention to specific drinking water, sanitation and hygiene (WASH) needs found in special cases including in refugee camps, detention centres, mass gatherings and pilgrimages | Section 5.2.9 |

Again, a single indicator was proposed to monitor and report progress with this target, namely **SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.** This implied that through an improvement in this indicator, that the target would be achieved by 2030. Clearly SDG Indicator 6.2.1 only focussed on monitoring and reporting some of the components of the SDG Target (i.e. safely managed sanitation service), and did not address other aspects of the target (i.e. equity; affordability). Each component of Target 6.2 was discussed in more detail in the section below and reviewed against the monitoring and reporting capability of the current SDG Indicator 6.2.1.

### 5.2.1 Monitoring "Access" to Sanitation

The UN-Water (2015) indicated that **access** to sanitation *implied facilities close to home that can be easily reached and used when needed.* The component of the target required that sanitation be accessible, including too vulnerable groups such as children, older persons, persons with disabilities and chronically ill people.

Like access to drinking water, the human right to sanitation required access to sanitation from two perspective, (1) proximity and (2) physical access.

A *physically accessible* sanitation facility would be designed at a location that allows physical access of the user (incl. aged, children and persons with disabilities) at all times. Physical accessibility thus required that it is easy to reach and enter the facility (i.e. a ramp for a wheelchair user; steps for the ages) and that the route to the facility, if in the yard, was clear and easily navigated. The presence of safely managed sanitation, which requires the sanitation facility to be on the premises, could be utilised as a proxy indicator for physically accessibility if the assumption was made that a facility on the property would be accessible to all users in the household.

Access to sanitation, according the UN Rapporteur (2014) on the right to sanitation, also includes the need for the facility to be *close to the user* (close proximity). This was preferably a facility within the yard or within the household. Sanitation facilities must also be placed within, or in the immediate vicinity of each workplace, educational and health institution, as well as any other place where people spend significant amounts of time (UN Rapporteur, 2014).

This access component of SDG Target 6.2 also included **availability** of sanitation, which according to the UN Rapporteur (2014) on the human right to sanitation, required that individuals have facilities that meet their needs now and in the future addressing three components of availability, namely:

a) *Sufficient number of sanitation facilities* to ensure that all of the needs of each person are met. The availability of sanitation included a household having access to a toilet/latrine,

as well as, crucially, adequate systems for the collection, treatment, and disposal or reuse of wastes.

a) *Hygiene facilities* were available for handwashing and other hygiene requirements at toilets and latrines, water storage areas and food preparation area

b) *Sanitation and hygiene facilities and services at health and educational institutions such as schools and clinics, detention centres such as prisons, and workplaces, markets and other public places*. To comprehensively report this component of the SDG target therefore, a suite of new indicators would be required including the percent of schools, clinics, hospitals, etc. which provide access to drinking water to, at least, the boundary of the property.

Clearly the definition of available sanitation provided by the UN Rapporteur required the availability of sanitation at health and education institutions, as well as other public sites. Similar to the requirements for a water supply service, the UNICEF and World Health Organization (2017) recommended expanding the monitoring and reporting requirements of SDG Target 6.2 to include WASH in institutional setting. Recommendations were that monitoring and reporting of WASH in schools and health care facilities be prioritised, expanding in future to include WASH in other institutional settings (WHO and UNICEF, 2017).

The JMP had thus provided a three WASH service ladders schools – water, sanitation and hygiene-, which would enable countries to track progress towards SDG *Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.* Target 4.a. was expected to be tracked through the monitoring and reporting of a single indicator, namely SDG Indicator 4.a.1: *Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities**;** (e) basic drinking water;* ***(f) single-sex basic sanitation facilities****; and (g) basic handwashing facilities (as per the WASH indicator definitions)*. The foci of the sanitation ladder for schools was thus to ensure schools had at least access to a **basic** sanitation service, defined as an *improved facility which are single sex and usable at the school* (Figure 48). Interestingly, what separated a limited and a basic sanitation service in a school was the need for gender specific toilet and functionality of the facilities for a basic service. If the sanitation was an improved sanitation, but was shared by boys and girls or which was not functioning, the schools had a “limited” sanitation service.

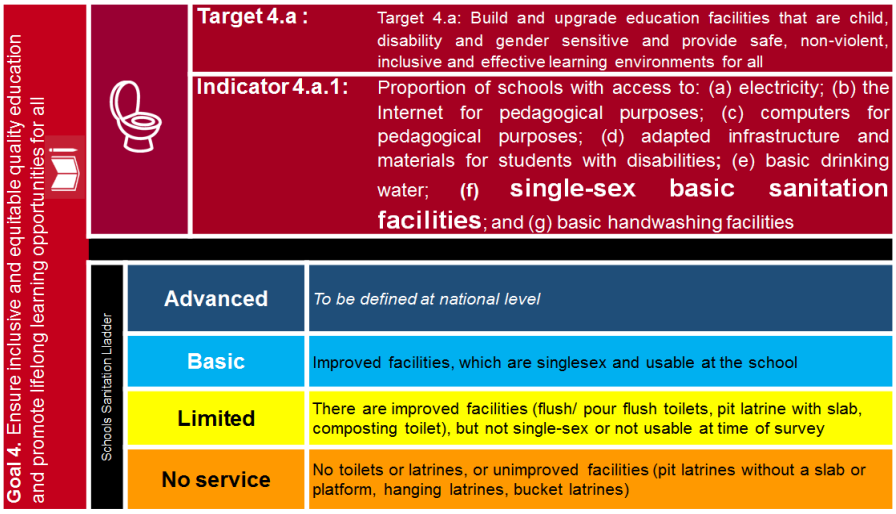


Figure 48: JMP sanitation service ladder for schools (taken from WHO and UNICEF, 2017)

In countries where **basic** sanitation services was already available at all schools, the country would need to define an **advanced** level of services to which it would strive (WHO and UNICEF, 2017). Criteria for an advanced level could include additional elements to those in the 'basic level' such as the ratios of pupils per toilet.

Sanitation in health care facilities, as recommend by the UNICEF and World Health Organization (2017), followed similar requirements as for schools. The JMP recommended that sanitation ladder for WASH in health care facilities strive for a **basic** level of sanitation at health care facilities but where a **basic** services were already the norm, a country-defined **advanced** service level should be the foci (Figure 49) (WHO and UNICEF, 2017). Similar to the requirements of a basic sanitation service in schools, this level of service in a health facility had a number of additional requirements, as compared to schools and to the 'limited' level of on the ladder. Basic sanitation in health facilities requires facilities which are specific for staff and for patients (separate), for men and for women (separate), has menstrual hygiene management facilities and addresses requirements of the disabled. The school definition of a basic sanitation service could benefit from expanding to include, at least, the need for menstrual hygiene facilities.

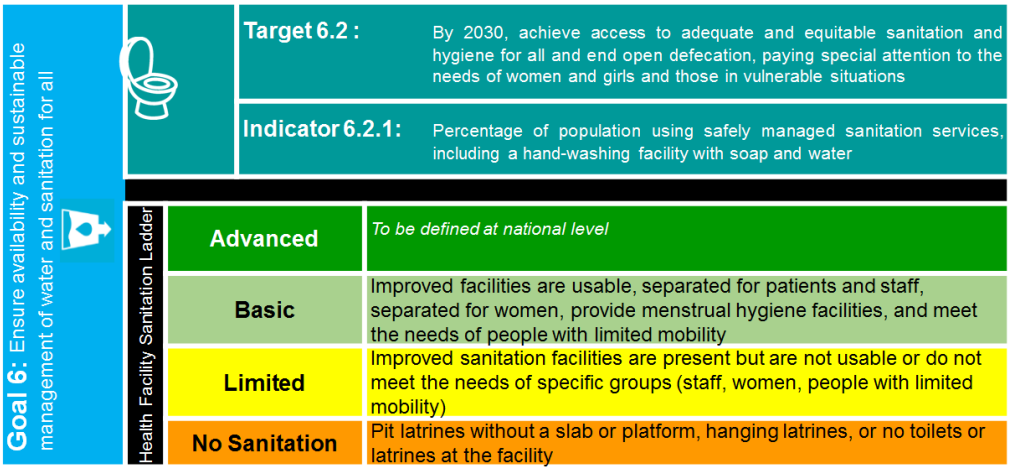


Figure 49: JMP sanitation service ladders for monitoring WASH in health care facilities

The final component of access to sanitation was that of **acceptability**, dignity, privacy which requires that the service was acceptable to the users and meets the human rights criteria of providing dignity and privacy (UN Special Rapporteur, 2014).

The fourth component of access to a safely managed sanitation services was that of **affordability.** This component was however addressed under the Equity component in Section 5.2.3 below.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored some of the aspects of "access" component required to achieve SDG Target 6.2, namely:

- Proximity and physical access to the sanitation service – the sanitation facility should be exclusively available to the households
- Availability to sanitation, i.e. not shared – sufficient number of sanitation facilities and the need for handwashing facilities;

The aspects of 'access" which were not monitored by the indicators included:

- Availability at public institutions – not currently a focus of the indicator
- Acceptability of the sanitation service

### 5.2.2 Monitoring "Equitable" Sanitation

The equitable sanitation component of SDG Target 6.2 *implies progressive reduction and elimination of inequalities among population subgroups* (UN-Water, 2015). This component was discussed under Section 46.1.1.2 above as equity in water is similar to equity in sanitation.

In *SDG 6.2.1, proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water,* the equity component of the target was not monitored and reported. However, in the case of sanitation, since the SDG Target 6.2 does not make explicit mention of affordable sanitation, the affordability component of sanitation is assumed to form part of the definition of equity in the SDG Target 6.2. There is an obligation to provide free services or subsidized services to poor individuals which cannot afford to pay for the service. In setting affordability standards for sanitation, consideration of both the on-site and networked system must consider the full costs of sanitation, from water source, to the collection, transport and disposal or reuse of human wastes (UN Rapporteur, 2014).

*SDG Target 1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well* ***as access to basic services****, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance* addressed equity issues in the water sector, to some extent (See Section 6.2.4 for more discussion)

**Summary:** The current *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* did not monitor the "equitable" access to a safely managed sanitation service aspect of SDG Target 6.2. Future monitoring of SDG Target 6.2 must find a means to monitor and report this aspect of the target for this Target to be reached by 2030. If equity in access does not become the norm in monitoring and reporting progress towards this target, the globe will only achieve universal access to adequate sanitation and hygiene for all and not u access to adequate **and equitable** sanitation and hygiene for all.

### 5.2.3 Monitoring "Adequate" Sanitation

Access to "adequate" sanitation, in this SDG Target 6.2, implies *a system that safely separates excreta from human contact throughout the sanitation chain, either through safe containment and disposal in situ, or through safe transport and treatment/reuse off premises* (UN-Water, 2015). Adequate sanitation thus related to the safety of the sanitation services – safe from human excreta (directly or indirectly). Realizing this component of SDG Target 6.2 required that the sanitation facilities must be safe to use and must effectively prevent human, animal and insect contact with human excreta. Ensuring safe sanitation further required hygiene promotion and education, to ensure that people use toilets in a hygienic manner.

In *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water,* the adequate component of the target is monitored and reported based on the "safely managed" requirement of the indicator. Safely managed sanitation services would use the sanitation services ladder to determine whether households have been provided with this level of sanitation ladder, namely access to an improved sanitation facility that was not shared and where the excreta was disposed of safely (Table 34). Hence, only households which have all the specifications of a safely managed sanitation service are included in the reporting of SDG Indicator 6.2.1.

**Table 34: Component of a safely managed sanitation services in SDG Indicator 6.2.1 which provides the scope of the progress towards adequate sanitation in SDG Target 6.2 (adapted from GEMI, 2016c and WHO and UNICEF, 2017)**

| Components of safely managed sanitation service | Description |
|---|---|
| **Improve sanitation facility** | • wet sanitation technologies of<br>  ○ flush and pour flush toilets connecting to sewers,<br>  ○ flush and pour flush toilets connecting to septic tanks or<br>  ○ flush and pour flush toilets connecting to pit latrines<br>• dry sanitation technologies of:<br>  ○ ventilated improved pit (VIP) latrines;<br>  ○ pit latrines with slabs<br>  ○ composting toilets. |
| **Not shared with other households** | The facility must be utilized by a single household |
| **Safely disposed/treated in-situ** | Includes safe containment of excreta in VIPs, pit toilets (not in South Africa) and septic tanks. Assumes the households is using a double pit VIP or abandons the pit/septic tank when full and digs/constructs a new facility. Human contact with the pit/septic tank is avoided. |
| **Treated off-site** | Includes only that excreta which reaches the treatment works and is treated effectively (to wastewater quality limits). Includes sewer conveyed (from municipal systems) and tanker from pit systems and septic tanks) excreta which reaches the treatment works and is treated to quality limits. |
| **Handwashing facility** | Includes a handwashing facility at the sanitation facility, with soap and water |

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the requirements required for a "safely managed" sanitation facility, namely access to an improved sanitation facility that was not shared and where the excreta was disposed of safely. The assumption could be made that a household having access to a safely managed sanitation service would have access to "adequate" sanitation services.

### 5.2.4 Monitoring "Sanitation"

The sanitation component of SDG Target 6.2, according to UN-Water (2015), was defined as the *provision of facilities and services for safe management and disposal of human urine and faeces.* To achieve this target by 2030, households would need to have access to an improved sanitation facility which safely disposed of human excreta.

*SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* addressed the monitoring and reporting of the "sanitation" component of the target through the requirements of the population having access to a "safely managed sanitation service". By definition, a safely managed sanitation service implies that the households has access to an *improved sanitation facility* that was not shared and where the excreta was disposed of safely. Noteworthy, households with access to a basic sanitation service or limited sanitation service would not necessarily meet these requirements of having access to "sanitation", while both levels of the sanitation ladder required that a household had access to an improve sanitation facility, the safe disposal of human excreta from these systems was not a pre-requisite for these two levels of the ladder.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "sanitation" component of the SDG Target 6.2.

### 5.2.5 Monitoring "Hygiene"

See section 6.1.3 below for discussion on monitoring and reporting hygiene in SDG Target 6.2.

### 5.2.6 Monitoring "For all"

This component of SDG Target 6.2 related to sanitation and hygiene being *suitable for use by men, women, girls and boys of all ages, including people with disabilities.* This component of the target is equivalent to the 'universal' component of the SDG Target 6.1. Sanitation 'for all", which was a requirement to achieve Target 6.2, would not be monitored by SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* if the indicator was monitored in the same manner as the MDG indicator. The MDG indicator only reported access of individuals to sanitation at a household level. Hence, if the SDG indicator 6.2.1 followed this monitoring norm, only one aspect of access "for all" would be monitoring and reported for the SDG.

To comprehensively report this component of the SDG target therefore, a suite of new indicators would be required including the percent of schools, clinics, hospitals, etc. which provide access to drinking water to, at least, the boundary of the property. Similarly, the indicator would need to be disaggregated and report at a household level to demonstrate the percent of women, men, children, vulnerable, etc. with access to a safely managed sanitation service.

*SDG Target 1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well* ***as access to basic services****, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance* addressed equity issues in the water sector, to some extent in that it would demonstrate the all individuals in a country would have access to at least a basic sanitation service, irrespective of their socio-economic status; gender within the household; age of the household, etc. (See Section 6.2.4 for more discussion)

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* would monitor some (i.e. household) aspects of access "for all" to a safely managed sanitation which was required to achieve SDG Target 6.2. If the indicator was to comprehensively monitored access to adequately managed sanitation, this aspect would need to be monitored and reported at all sites of daily activities such as at home, schools, health-care facilities and in the workplace and was disaggregated by socio-economic status of household, gender, age, etc.

### 5.2.7 Monitoring "end open defecation"

Unlike the MDGs, SDG Target 6.2 included explicit reference to ending open defecation. Open defecation was the lowest level of the JMP sanitation ladder, shown in Figure 40 above. The elimination of open defecation and moving individual up the sanitation ladder had been identified as one of the highest priorities to facilitate the elimination of extreme poverty by 2030 (WHO and UNICEF, 2017).

The component of SDG Target 6.2. related to excreta of adults and children which were deposited (directly or after being covered by a layer of earth) in the bush, a field, a beach or any open area, discharged directly into a drainage channel, river, sea or any other body, or are wrapped in temporary material and discarded (UN-Water, 2015). Ending open defecation was a vital step to achieving safe sanitation for all (AMCOW, 2016).

This component of SDG Target 6.2 relates closely to the components of improving access to sanitation services for all as reduction in one component shows improvement in the other component.

The SDG indicators currently do not focus on an open defaecation indicators, however the AMCOW Monitoring Systems includes such an indicator (Figure 27). It is recommended that South Africa include an open defaecation indicator in the Water Monitoring Framework as this would address the open defaecation component of the SDG Target 6.2.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* does not explicitly report the 'open defecation" which was required to achieve SDG Target 6.2. However, in monitoring access to "safely managed sanitation service" a country would be capturing households without sanitation facilities. Hence this component of SDG Target 6.2 could be reported when monitoring and reporting SDG Indicator 6.2.1.

In South Africa the capturing of access data would need to be explicit in capturing this aspect as households without sanitation are generally classified as 'no facility'. The country would have to either assume that these individuals were using open defecation or would need to ask this question explicitly in the capturing of data for SDG Indicator 6.2.1.

### 5.2.8 Monitoring "the needs of women and girls"

Unlike the MDGs, SDG Target 6.2 included explicit reference to the sanitation needs of women and girls and those in vulnerable situations. The sanitation SDG Target 6.2 has a strong focus on *reducing the burden of water collection and enabling women and girls to manage sanitation and hygiene needs with dignity. Special attention should be given to the needs of women and girls in high-use settings such as schools and workplaces, and high-risk setting such as health-care facilities and detention centres*.

Interestingly, despite the SDG Target 6.2 making specific reference to addressing the sanitation needs of women and girls, SDG Indicator 6.2.1 would not directly report this component of the target.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* does not explicitly report the '"the needs of women and girls"" which was required to achieve SDG Target 6.2.

### 5.2.9 Monitoring "those in vulnerable situations"

This equity component of the SDG Target 6.2 is defined by UN-Water (2016b) as *paying attention to specific drinking water, sanitation and hygiene (WASH) needs found in special cases including in refugee camps, detention centres, mass gatherings and pilgrimages.*

**Summary:** Like the needs of women and girls"" component of SDG 6.2, the current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* does not explicitly report on sanitation for "those in vulnerable situations" which was required to achieve SDG Target 6.2.

### 5.2.10 Summary of Component of SDG Target 6.2 which were monitored and reported by SDG Indicator 6.2.1.

As shown in the previous section, only some of the component of the SDG Target 6.2*, by 2030, achieve* ***access*** *to* ***adequate*** *and* ***equitable sanitation*** *and* ***hygiene*** *for all and* ***end open defecation****, paying special attention to the needs of* ***women and girls*** *and those in* ***vulnerable situations*** was monitored and reported by SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with*

*soap and water.* A summary of the components which were or were not report by SDG Indicator 6.2.1 were shown in Table 35.

**Table 35: Component of SDG Target 6.2 which were monitored and reported by SDG Indicator 6.2.1. (√ = component fully reported by the indicator; X = component not reported by the indicator; Some = some aspects of the component reported by the indicator)**

| Target Text | Normative interpretation | Reported by the Indicator |
|---|---|---|
| By 2030, achieve **access** | Implies facilities close to home that can be easily reached and used when needed | **Some** |
| To **adequate** | Implies a system that hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site | √ |
| And **equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | **X** |
| **Sanitation** | The provision of facilities and services for safe management and disposal of human urine and faeces | √ |
| And **hygiene** | See Section 4.1.3 below | **Section 6.1.3** |
| **For all** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | **Some** |
| And **end open defecation** | Excreta of adults and children are deposited (directly or after being covered by a layer of earth) in the bush, a field, a beach or any open area, discharged directly into a drainage channel, river, sea or any other body, or are wrapped in temporary material and discarded | **X** |
| Paying special attention to the **needs of women and girls** | Implies reducing the burden of water collection and enabling women and girls to manage sanitation and hygiene needs with dignity. Special attention should be given to the needs of women and girls in high-use settings such as schools and workplaces, and high-risk setting such as health-care facilities and detention centres. | **X** |
| **and those in vulnerable situations** | | **X** |

## 5.3 GAPS IN MONITORING OF SDG TARGET 6.2: BY 2030, ACHIEVE ACCESS TO ADEQUATE AND EQUITABLE SANITATION AND HYGIENE FOR ALL AND END OPEN DEFECATION, PAYING SPECIAL ATTENTION TO THE NEEDS OF WOMEN AND GIRLS AND THOSE IN VULNERABLE SITUATIONS

The second target of Goal 6 of the SDGs is *SDG 6.2, by 2030,* achieve access to adequate and equitable sanitation *and **hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*. Interpreting the hygiene component of the SDG Target, to achieve this imperative the global would be striving to achieve, by 2030, access to adequate and equitable hygiene for all. The UN-Water (2016) had deconstructs this SDG target as shown in Table 36. This section of the report reviews the deconstructed component of SDG Target 6.2 from the perspective of hygiene.

**Table 36: Normative interpretation of SDG target 6.2 (taken from UN-Water 2016)**

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| By 2030, achieve **access** | Implies facilities close to home that can be easily reached and used when needed | Section 5.3.1 |
| To **adequate** | Implies a system that hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site | Section 5.3.2 |
| And **equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | Section 5.2.3 |
| **Sanitation** | Section 5.2 | Section 5.2 |

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| And **hygiene** | The condition and practices that help maintain health and prevent spread of disease including handwashing, menstrual hygiene management and food hygiene | Section 5.3.1 |
| **For all** | Section 5.2 | Section 5.2 |
| And **end open defecation** | Section 5.2 | Section 5.2 |
| Paying special attention to the **needs of women and girls** | Section 5.2 | Section 5.2 |
| And those in **vulnerable situations** | Section 5.2 | Section 5.2 |

Again, a single indicator is proposed to monitor and report progress with the hygiene component of this target, namely SDG 6.2.1 proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water**. This implied that through an improvement in this indicator, that the target would be achieved by 2030. The hygiene component of Target 6.2 was discussed in more detail in the section below and reviewed against the monitoring and reporting capability of the current SDG Indicator 6.2.1.

### 5.3.1 Monitoring "Access" to hygiene

The UN-Water (2016) defined 'access" as a *facilities close to home that can be easily reached and used when needed.* Access to hygiene would thus imply that hygiene facilities would need to be provided close to home, ensuring that the facility could easily be reached and used by the householders when needed. This component of SDG target 6.2 would require monitoring of *accessibility, availability* and *acceptability* of hygiene services.

Access to hygiene, like **access** to water supply and sanitation, included (1) proximity and (2) physical access to hygiene services. A physically accessible to a hygiene services was that a handwashing facility was available at the sanitation facility, which can be accessed by all users (incl. aged, children and persons with disabilities) at all times. Physical accessibility required that the handwashing facility was easily accessed, had water dispensed from the facility and had soap at the facility.

Access to sanitation, according the UN Rapporteur (2014) on the right to sanitation, also includes the need for the facility to be *close to the user* (close proximity). This was preferably a facility within the yard or within the household. Hygiene facilities must also be placed within, or in the immediate vicinity of each workplace, educational and health institution, as well as any other place where people spend significant amounts of time (UN Rapporteur, 2014).

Indicator SDG 6.2.1 *proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water*** does address the physical and proximity component of access to a hygiene facility.

The definition of a basic hygiene service on the JMP hygiene ladder had three aspects, (1) a handwashing facility on the premises; (2) with soap and (3) with water. The need for the handwashing facility to be one the premises addresses the proximity of the hygiene facility.

This access component of SDG Target 6.2 also includes **availability** of hygiene, which according to the UN Rapporteur (2014) on the human right to sanitation, required that

individuals have facilities that meet their needs now and in the future addressing *hygiene facilities which*

a) *were available for handwashing and other hygiene requirements at toilets and latrines, water storage areas and food preparation area* and

c) *hygiene facilities at health and educational institutions such as schools and clinics, detention centres such as prisons, and workplaces, markets and other public places*.

Indicator SDG 6.2.1 *proportion of population using safely managed sanitation services,* ***including a hand-washing facility with soap and water*** does currently address some of the reporting requirement of the availability component of SDG 6.2. The definition of a basic hygiene service (discussed above) requires that the handwashing facility is on the premises. This could be utilised as a proxy for the availability of the hygiene facility, namely if the handwashing facility, soap and water were on the premises, it should be available for handwashing. However, to comprehensively report this component of the SDG target a suite of new indicators would be required including the proportion of individuals with a handwashing facility at a toilet, water storage area and food preparation area and the proportion of schools, clinics, hospitals, etc. which provide hygiene facility.

The JMP had provided a WASH hygiene service ladders schools, which would enable countries to track progress towards SDG *Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.* Target 4.a. was expected to be tracked through the monitoring and reporting of a single indicator, namely SDG Indicator 4.a.1: *Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities**;** (e) basic drinking water; (f) single-sex basic sanitation facilities; and* ***(g) basic handwashing facilities*** *(as per the WASH indicator definitions)* (Figure 50). The foci of the hygiene ladder for schools was thus to ensure schools had at least access to a **basic** hygiene service, defined as access to a handwashing facility, which has soap and water available on premises. Since the definition of a basic hygiene service in the household's hygiene ladder (provided in Section 4.1.2 Figure 41) was exactly the same as that of hygiene at schools, this component can be measured in the similar manner at both sites.

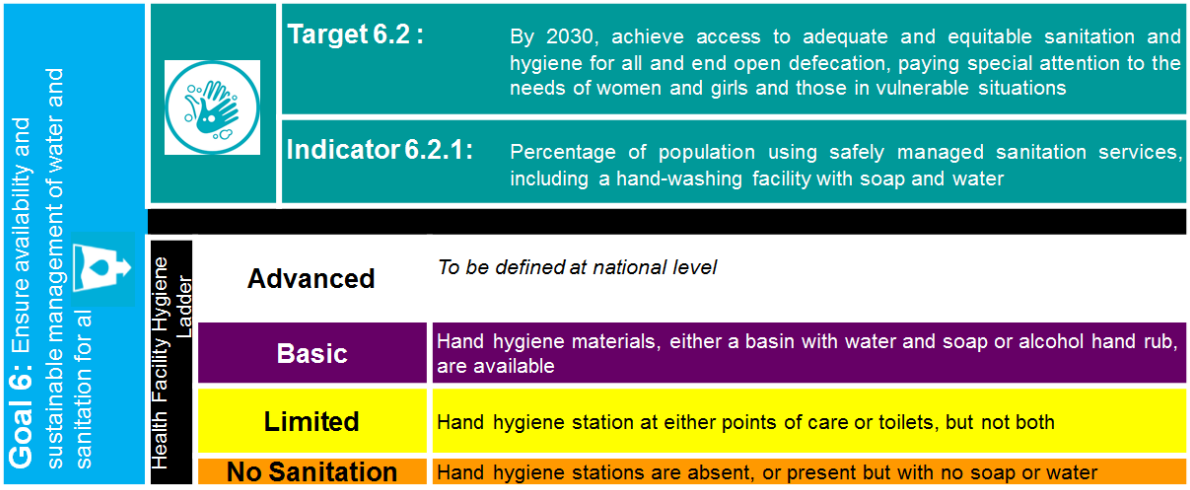


Figure 50: JMP sanitation service ladders for monitoring WASH in health care facilities

Hygiene in health care facilities however had a number of additional requirements, as defined by the UNICEF and World Health Organization (2017). Basic hygiene in health facilities required hand hygiene material – using either water and soap or alcohol hand rub being at the points of care and at toilets. If the materials were not found at one of the sites, then the service is limited.

The JMP recommended that hygiene ladder for WASH in health care facilities strive for a **basic** level of sanitation at health care facilities but where a **basic** services were already the norm, a country-defined **advanced** service level should be the foci (WHO and UNICEF, 2017).

The final component of access to sanitation was that of **acceptability** which required that the services was acceptable to the users and meets the human rights criteria of providing dignity and privacy (UN Special Rapporteur, 2014). This component of access is not currently captured by the SDG Indicator 6.2.1.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water*** monitored some of the aspects of "access" to a hygiene service which was required to achieve SDG Target 6.2, namely:

- Physical access and Proximity of the hygiene service – the handwashing facility should be on the premises
- Availability to hygiene services, i.e. a facility on the premises could be a proxy for availability;

The aspects of 'access" which were not monitored by the indicators included:

- Availability at public institutions – not currently a focus of the indicator
- Acceptability of the hygiene services

### 5.3.2 Monitoring "Adequate" Hygiene

Access to "adequate" in this SDG Target 6.2 was defined by UN-Water (2016b) as *a system that safely separates excreta from human contact throughout the sanitation chain, either through safe containment and disposal in situ, or through safe transport and treatment/reuse off premises* (UN-Water, 2015). This definition does not address the 'adequate' aspect of hygiene. A definition was needed.

In SDG 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water*, the adequate component of the target was monitored and reported based on the "hand-washing facility with soap and water" requirement of the indicator. The assumption was made that accessibility to a hand-washing facility with soap and water was an indicator of 'adequate' hygiene.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the requirements required of a "hand-washing facility with soap and water" as a hygiene service. The assumption could be made that a household having access to a hand-washing facility with soap and water would have access to "adequate" hygiene services.

### 5.3.3 Monitoring "Equitable" Hygiene

The equitable component of SDG Target 6.2.*implies progressive reduction and elimination of inequalities among population subgroups* (UN-Water, 2015).

In *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water,* the equity component of hygiene in the target was not monitored and reported.

*SDG Target 1.4. By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well* ***as access to basic services****, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance* addressed equity issues in the water sector, to some extent (See Section 6.2.4 for more discussion)

**Summary:** The current *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* did not monitor the "equitable" access to a hygiene service aspect of SDG Target 6.2. Future monitoring of SDG Target 6.2 must find a means to monitor and report this aspect of the target for this Target to be reached by 2030.

### 5.3.4 Monitoring "Hygiene"

The UN-The Water (2015) defines this component of SDG Target 6.2 as *the condition and practices that help maintain health and prevent spread of disease including handwashing, menstrual hygiene management and food hygiene*. Of the range of hygiene behaviours considered important for health, handwashing with soap was identified as a top priority in all settings (AMCOW, 2016). The progress categories allow countries to track progress towards

the target over time. Thus this component of SDG Target 6.2 related to access to hygiene and adequate hygiene.

The National Sanitation Policy of South Africa defined hygiene as *Personal and household practices that serve to prevent infection and keep people and environments clean. The conditions and practices that help to maintain health and prevent the spread of diseases.* Hygiene was thus a broad concept.

It had been widely proved that improvements in hygiene, including hand hygiene, and water service infrastructure can reduce infections (Aiello and Larson, 2002). Many countries, including South Africa, thus focus on providing water supply and sanitation services to individuals without access. However, having a sanitation facility is not sufficient to prevent faecal contamination of individuals and households (Almedom *et al.*, 1997). The sanitation facility was only one of the barriers in the various routes of transmission of sanitation-related diseases. Other transmission routes, shown by the 5-F diagram in Figure 52, which required barriers, include fingers, flies, fields (soil), and fluid (water). Figure 52 also indicated the effective primary (usually facility) and secondary (usually behavioural) barriers were indicated.

The primary and secondary barriers shown in Figure 51 affect an individual's health primarily by reducing the pathogen load in the environment to which an individual was exposed and thus, reducing the exposure of an individual to these pathogens. This in-turn reduces the individual's infection by these pathogens, reducing the morbidity and mortality from infection by the pathogen (Billig *et al.*, 1999).

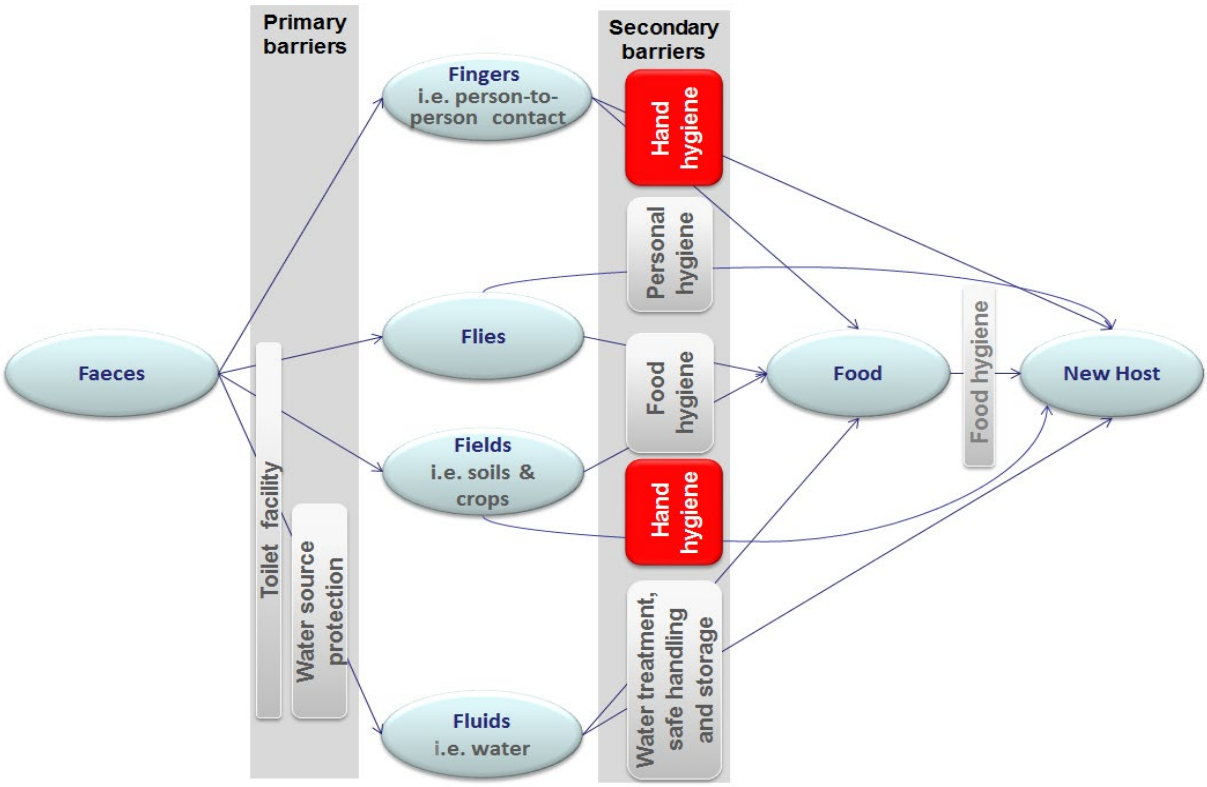


Figure 51: the 5-F diagram showing the most common routes of transmission of sanitation-related diseases (Adapted from Wagner and Laniox 1958)

In *SDG 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* the primary hygiene barriers are comprehensively monitored through the monitoring and reporting of the indicator, namely through the reporting of access to "safely managed water supply services" and "adequate sanitation services". A safely managed water supply service has a water quality requirement, thus providing the primary barrier of preventing human contact to faeces through water sources, i.e. water treatment to drinking water quality required the water to have no faecal coliforms in the water. Similarly, safely managed sanitation services had the requirement of *excreta are disposed of in situ or transported and treated off-site,* i.e. sanitation services require safe disposal and treatment of excreta, thus providing the toilet facility primary barrier.

In *SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* only monitors and reports one component of the secondary hygiene barriers required to achieve the hygiene imperative of SDG Target 6.2. To comprehensively report on progress towards SDG Target 6.2: *By 2030, achieve access to adequate and equitable... hygiene for all…* all the aspects of hygiene demonstrate in Figure 51 would require some form of monitoring, namely monitoring and reporting food hygiene barriers; personal hygiene barriers and water storage treatment barriers.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services,* ***including a hand-washing facility with soap and water*** monitored some of the aspects of hygiene service which was required to achieve SDG Target 6.2, namely:

- Primary barriers to transmission routes, i.e. safely manager water supply service and safely managed sanitation service
- Hand hygiene secondary barrier to transmission routes, i.e. a handwashing facility on the premises with soap and water.

The aspects of hygiene which were not monitored by the indicators included:

- Other secondary barriers to transmission routes, i.e. food hygiene barriers; personal hygiene barriers and water storage treatment barriers

### 5.3.5 Monitoring "For all"

This component of SDG Target 6.2 related to sanitation and hygiene being *suitable for use by men, women, girls and boys of all ages, including people with disabilities.* Hygiene 'for all", which was a requirement to achieve Target 6.2, would not be monitored by SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water.* A suite of new indicators would be required including the percent of schools, clinics, hospitals, etc. which provide access to handwashing facilities with soap and water. Similarly, the indicator would need to be disaggregated and report at a household level to demonstrate the percent of women, men, children, vulnerable, etc. with access to a handwashing facility with soap and water.

**Summary:** The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* would monitor all the aspects of access "for all" to a handwashing facility with soap and water which was required to achieve SDG Target 6.2. To comprehensively report this component of SDG Target 6.2 it would be necessary to monitored access to a handwashing facility with soap and water at all sites of daily activities such as at home, schools, health-care facilities and in the workplace and would need to be disaggregated by socio-economic status of household, gender, age, etc.

### 5.3.6 Summary of Component of SDG Target 6.2 which were monitored and reported by SDG Indicator 6.2.1.

As shown in the previous section, only some of the component of the SDG Target 6.2*, by 2030, achieve **access** to **adequate** and **equitable** sanitation and **hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations* was monitored and reported by SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water***. A summary of the components which were or were not report by SDG Indicator 6.2.1 were shown in Table 37.

**Table 37: Hygiene component of SDG Target 6.2 which were monitored and reported by SDG Indicator 6.2.1. (√ = component fully reported by the indicator; X = component not reported by the indicator; Some = some aspects of the component reported by the indicator)**

| Target Text | Normative interpretation | Reported by the Indicator |
|---|---|---|
| By 2030, achieve **access** | Implies facilities close to home that can be easily reached and used when needed | **Some** |
| To **adequate** | Implies a system that hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment off-site | √ |
| And **equitable** | Implies progressive reduction and elimination of inequalities among population subgroups | **X** |
| And **hygiene** | See Section 4.1.3 below | **Some** |
| **For all** | Suitable for use by men, women, girls and boys of all ages, including people with disabilities | **Some** |

## 5.4 Gaps in Monitoring of SDG 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

SDG Target 6.3 focussed on reducing water pollution, minimizing release of hazardous chemical and increasing treatment and reuse (UNSD, 2016). Inadequate or not treating domestic and industrial wastewater presents a serious health and environmental hazard. The UN-Water (2016) provides the definition of this target as the proportion of wastewater generated by households (sewage and faecal sludge) and economic activities (based on ISIC categories) that is safely treated. Target 6.3 sets to monitor and report progress with improving ambient water quality, which is essential to protect both ecosystem health (target 6.6 and SDGs 14 and 15) and human health (recreational waters and drinking water sources, target 6.1) (UN-Water, 2016b). Protecting water quality can be achieved by eliminating, minimizing and significantly reducing different streams of pollution into water bodies.

The target also focussed on monitoring and reporting progress with recycling (for example, recirculating water within an industry) and reuse (for example, using wastewater in agriculture) of treated wastewater, complementary to the focus on reduced freshwater withdrawals and increased use efficiency (target 6.4) (UN-Water, 2016b).

The UN-Water (2016b) deconstructs this SDG target as shown in Table 38.

**Table 38: Normative interpretation of SDG target 6.2 (taken from UN-Water 2016b)**

| Target Text | Normative interpretation | Section Relevant to this Component |
|---|---|---|
| By 2030, improve **water quality** by | Implies achieving adequate quality of receiving water bodies so that they do not present risks to the environment or human health | Section 5.4.1 |
| **Reducing pollution** | Implies minimizing the generation of pollutants at source and reducing the discharge of polluting substances from point sources (for example, wastewater outlets form economic activities and households) and non-point sources (for example, urban and agricultural runoff | Section 5.4.2 |
| **Eliminating dumping** and | Implies ending all inadequate disposal of waste (solid and liquid, for example, leachates from poorly managed solid waste) | Section 5.4.3 |
| **Minimizing release of hazardous chemicals and materials** | Implies reducing the generation, use and discharge of hazardous substances, as defined and listed in the conventions of Basel, Rotterdam and Stockholm | Section 5.4.4 |
| **Halving the proportion** of | Implies halving the proportion of wastewater that is untreated, generated by households and all economic activities (based on International Standards Industrial Classification (ISIC) Rev. 4) some economic activities are of special relevance due to high wastewater generation, including agriculture, mining and quarrying manufacturing, electricity and sewage | Section 5.4.5 |
| **Untreated** | Treatment implies any process for rendering wastewater fit to meet applicable environmental standards or other quality norms. Treatment can be categorised into primary, secondary and tertiary treatments (and further by mechanical, biological and advanced technology treatments) | Section 5.4.6 |
| Wastewater | Discarded water that is no longer required by the owner or user including discharges to drains or sewers for treatment or direct discharges into the environment, as well as water reused by another user without further treatment | Section 5.4.7 |
| And **increasing recycling** | Implies increasing the on-site reuse of water within the same establishment or industry | Section 5.4.8 |
| And **safe** | Implies water has undergone sufficient treatment combined with non-treatment barriers to protect human health, for the intended use (as described in the 2006 WHO Guidelines for safe use of wastewater, excreta and greywater | Section 5.4.8 |
| **Reuse** | Implies wastewater supplied to a user for further use, with or without prior treatment (for example us of household wastewater in agriculture), excluding the recycling of water within the same establishment | Section 5.4.8 |
| **Globally** | Implies increase recycling and safe reuse at the global scale, allowing for differentiated efforts at the national and regional scales, focusing efforts on water-scarce regions | Section 5.1.8 |

Progress with this SDG Target was monitored with two indicator, namely **SDG 6.3.1 proportion of wastewater safely treated** and SDG Indicator 6.3.2 Proportion of bodies of water with good ambient water quality. Both of these indicators related to the management of sanitation services in South Africa, and are intrinsically linked, with safely treated wastewater (reported by indicator 6.3.1) impacting directly on the ambient quality of water in the water resources of the country (reported by indicator 6.3.2). However, Indicator 6.3.1 is directly

linked to WASH in the country and was the focus of this report. The components of Target 6.3 was discussed in more detail in the section below and reviewed against the monitoring and reporting capability of the current SDG Indicator 6.3.1.

### 5.4.1 Monitoring "improved water quality"

The UN-Water (2016a) indicates that the 'improved water quality' component of SDG Target 6.3 *implies achieving adequate quality of receiving water bodies so that they do not present risks to the environment or human health.* Effectively, this implied that the quality of water in the water-related ecosystems (water resource) of South Africa was of a quality so as not to present an environmental or human health risk.

Water quality was impacted by a number of anthropogenic and natural activities, with some of the major point source pollution impacts on the water resource of South Africa being inadequate municipal, industrial and mining wastewater treatment and inadequate treatment of return flows from industry, energy and mining. Non-point sources of pollution of water resource emanate from runoff from agricultural activities.

Monitoring and reporting this component of SDG Target was through **SDG 6.3.1 proportion of wastewater safely treated**. SDG Indicator 6.3.1 did not directly report this component of SDG 6.3 as the indicator focusses on safely treating wastewater. However, by ensuring that all wastewater in South Africa is safely and correctly treated before discharge into water resource, the indicator would indirectly contribute to any positive change in water quality as required by the SDG 6.3. Effectively indicator SDG 6.3.1 was an output indicator required to achieve the outcome indicator of SDG Indicator 6.3.2 Proportion of bodies of water with good ambient water quality.

**Summary:** The current SDG Indicator 6.3.1 *proportion of wastewater safely treated* does not directly monitor and report the "improved water quality" component of SDG 6.3 but would contribute to the achieving of SDG Indicator 6.3.2. *Proportion of bodies of water with good ambient water quality* and thus, indirectly contributed to achieving this component of SDG 6.3.

### 5.4.2 Monitoring "reducing pollution"

The UN-Water (2016a) defines this component of SDG 6.3 *as minimizing the generation of pollutants at source and reducing the discharge of polluting substances from point sources (for example, wastewater outlets form economic activities and households) and non-point sources (for example, urban and agricultural runoff).*

Wastewater originates from domestic, commercial and industrial sources. Municipal wastewater is mainly comprised of water (99.9%) together with relatively small concentrations of suspended and dissolved organic and inorganic solids (FAO, undated). The constituents of wastewater include a varying range of potential contaminants and a number of potentially toxic elements such as arsenic, cadmium, chromium, copper, lead, mercury, zinc (FAO, undated).

This component of SDG Target 6.3 focused on reducing the polluting substances from wastewater outlets reaching water sources and from non-point sources such as wash-off from overflowing/leaking sanitation systems. SDG Indicator 6.3.1 did not directly report this component of SDG 6.3 as the indicator focusses on safely treating wastewater. However, the

assumption could be made that by monitoring and reporting the levels of safely treated wastewater the quantity of pollutants entering water resources would be reduced and would thus contribute to achieving Target 6.3. To comprehensive monitor and report this component of the SDG Target a programme of monitoring levels of certain pollutant determinands within water sources would be required.

**Summary:** The current SDG Indicator 6.3.1 *proportion of wastewater safely treated* does not directly monitor and report the "reducing pollination" component of SDG 6.3 but would contribute to the achieving of SDG Indicator 6.3.2. *Proportion of bodies of water with good ambient water quality* and thus, indirectly contributed to achieving this component of SDG 6.3

### 5.4.3 Monitoring "eliminating dumping"

The UN-Water (2016a) indicates that this component of SDG 6.3 i*mplies ending all inadequate disposal of waste (solid and liquid, for example, leachates from poorly managed solid waste).*

**Summary:** The current SDG Indicator 6.3.1 *proportion of wastewater safely treated* does not directly monitor and report the "elimination dumping" component of SDG 6.3. To adequately monitor this component of SDG 6.3 would require a comprehensive surveillance monitor programme of the water resources of a country to determine points and type of 'dumping' which would be occurring. Prosecutions of water pollution could also be utilised as a proxy indicator, with the assumption made that fewer cases indicating reduced 'dumping"

### 5.4.4 Monitoring "minimizing release of hazardous chemicals and materials"

This component of SDG Target 6.3, according to the UN-Water (2016a), can be defined as *reducing the generation, use and discharge of hazardous substances, as defined and listed in the conventions of Basel, Rotterdam and Stockholm.*

Again, the current SDG Indicator 6.3.1 *proportion of wastewater safely treated* does not directly monitor and report the "minimizing release of hazardous chemicals and materials" component of SDG 6.3 but would indirectly contribute indirectly contribute to achieving this component of SDG 6.3. By ensuring wastewater was safely treated, the assumption could be made that the release of hazardous chemicals and materials into water source would be minimised. To directly monitor this component as comprehensive programme of monitoring hazardous chemicals and materials in water sources would be required.

**Summary:** SDG Indicator 6.3.1 *proportion of wastewater safely treated* does not directly monitor and report the "minimizing release of hazardous chemicals and materials" component of SDG 6.3.

### 5.4.5 Monitoring "halving the proportion"

The UN-Water (2016a) defines this component of SDG Target 6.3 as *halving the proportion of wastewater that is untreated, generated by households and all economic activities (based on International Standards Industrial Classification (ISIC) Rev. 4.*

UN-Stats indicates that this component of SDG Target 6.3 focus on hazardous industries and households (municipalities). In this context, the South Africa the *Revision Of General Authorisations In Terms Of Section 39 Of The National Water Act, 1998 (Act No. 36 Of 1998) (The Act)* provides a definition of wastewater from these sources, namely:

a) **complex industrial wastewater** defined as wastewater arising from industrial activities and premises, that contains –
    i. a complex mixture of substances that are difficult or impractical to chemically characterise and quantify; or
    ii. one or more substances, for which a wastewater limit value has not been specified, and which may be harmful or potentially harmful to human health, or to the water resource (identification of complex industrial wastewater will be provided by the Department upon written request);
b) **biodegradable industrial wastewater** defined as wastewater that contains predominantly organic waste arising from industrial activities and premises including –
    i. milk processing;
    ii. manufacture of fruit and vegetable products;
    iii. sugar mills;
    iv. manufacture and bottling of soft drinks;
    v. production of alcohol and alcoholic beverages in breweries, wineries or malt houses;
    vi. manufacture of animal feed from plant or animal products;
    vii. manufacture of gelatine and glue from hides, skin and bones;
    viii. abattoirs;
    ix. fish processing; and
    x. confined animal feeding operations.
c) **domestic wastewater** defined as wastewater arising from domestic and commercial activities and premises, and may contain sewage;

This implied that South Africa would need to monitor and report on the proportion of wastewater generated by agriculture, mining and quarry manufacturing, energy, municipalities which is treated.

**Summary:** Monitoring and reporting progress with SDG Indicator 6.3.1 *proportion of wastewater safely treated* would directly monitor and report the "halving the proportion" component of SDG 6.3, as increasing the proportion of wastewater which is safely treated in a country would contribute to "halving the proportion" component of SDG 6.3.

### 5.4.6 Monitoring "Untreated"

Untreated, according the UN-Water (2016a) *implies that wastewater has not underground a treatment process to rending it fit to meet applicable environmental standards or other quality norms. Treatment can be categorised into primary, secondary and tertiary treatments (and further by mechanical, biological and advanced technology treatments).*

Figure 52 shows the definition of untreated wastewater, which in a piped sewer system would be wastewater which has not undergone any primary secondary, tertiary or advanced

treatment (i.e. bottom of the treatment ladder). Similarly, untreated excreta from on-site sanitation would be faecal sludge which has not separated the solid/liquid fractions (settling tanks or ponds); undergone dewatering and/or stabilization of the solid fraction while treating the liquid fractions or treatment of the both the solid and liquid fractions (WHO, 2016b).

The current SDG Indicator 6.3.1 *proportion of wastewater safely treated* would monitor and report the "untreated" component of SDG 6.3, as the lowest level of safely treated wastewater ladder (Figure 52) would be the volumes of untreated wastewater in a country.

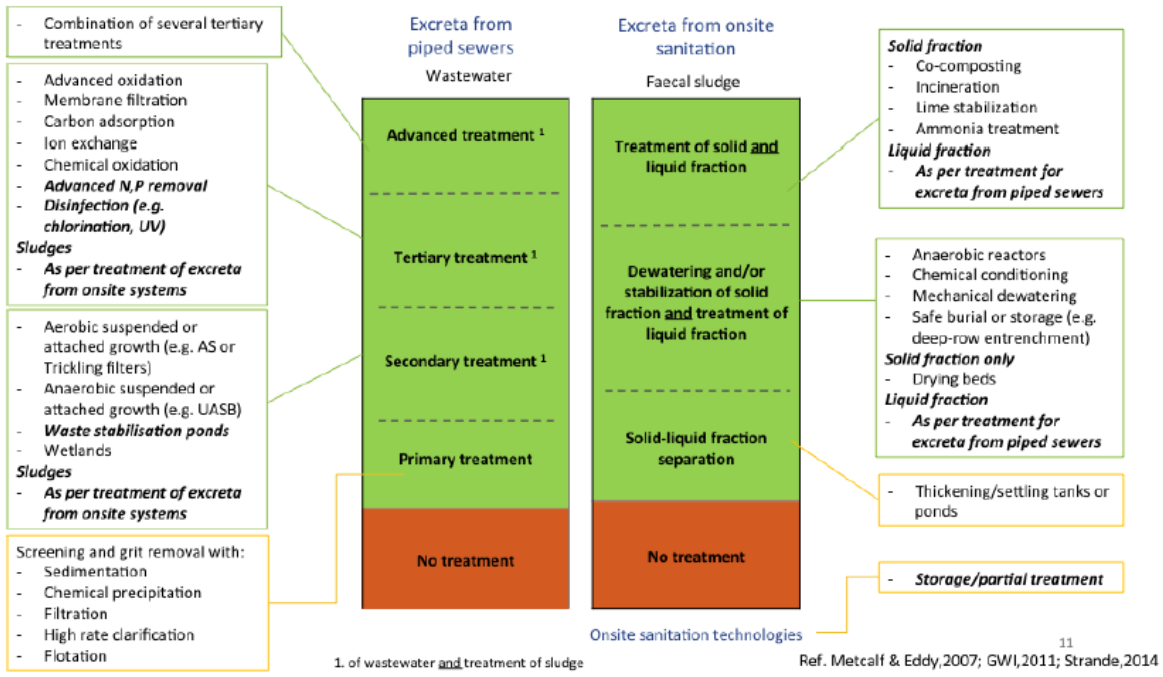


Figure 52: Definition of treatment of excreta (taken from WHO, 2016b)

**Summary:** Monitoring and reporting progress with SDG Indicator 6.3.1 *proportion of wastewater safely treated* would directly monitor and report the "untreated" component of SDG 6.3, as increasing the proportion of wastewater which is safely treated in a country would reduce the levels of "untreated" component of SDG 6.3.

### 5.4.7 Monitoring "Wastewater"

Wastewater is defined by UN-Water (2016a) as *discarded water that is no longer required by the owner or user including discharges to drains or sewers for treatment or direct discharges into the environment, as well as water reused by another user without further treatment.* In the South Africa context, wastewater is defined as *water containing waste, or water that has been in contact with waste material* (DWS, 2013).

The foci of this component of SDG Target 6.3. was household wastewater, which included *faecal waste from onsite facilities (such as emptying and cleaning of cesspools and septic tanks, sinks and pits) as well as off-site wastewater treatment plants according to the ISIC definition 3700 for "Sewerage"* (UNSD, 2016). The inclusion of excreta from onsite facilities

was an important inclusion in the targets from a public health, environment and equity perspective (UNSD, 2016). The second aspect which would requirement monitoring for this component of SDG Target 6.3 was that of industrial wastewater, which includes point source agricultural discharges. This aspect of the wastewater responded to the minimizing of the release of hazardous chemicals (UNSD, 2016).

Indicator 6.3.1 measures the proportion of all wastewater generated by households and by economic activities (based on ISIC categories) that is safely treated compared to total wastewater generated by these activities. In the South Africa legislative context, this would include the proportion of domestic and complex industrial wastewater safely treated. Indicator 6.3.1 used the sanitation services ladder of Indicator 6.2.1 to track changes in domestic wastewater treatment in the country (Table 39), in that a crucial requirement for a households having safely managed sanitation services is that the excreta was safely disposed/treated, with the systems is a wet or dry sanitation facility. Hence, only households which have all the specifications of a safe sanitation service are included in Indicator 6.3.1.

**Table 39: Component of a safely managed sanitation services which provides the scope of the domestic wastewater included in Indicator 6.3.1 (taken from GEMI, 2016c)**

| Components of safely managed sanitation service | Description |
|---|---|
| **Improve sanitation facility** | Include flush or pour flush toilets connected to a piped sewer systems, septic tank or pit toilet (not an improved service in South Africa); a Ventilated Improved Pit (VIP) toilet; a pit latrine (not an improved service in South Africa) or a compositing toilet |
| **Not shared with other households** | The facility must be utilized by a single household |
| **Safely disposed/treated in-situ** | Includes safe containment of excreta in VIPs, pit toilets (not in South Africa) and septic tanks. Assumes the households is using a double pit VIP or abandons the pit/septic tank when full and digs/constructs a new facility. Human contact with the pit/septic tank is avoided. |
| **Treated off-site** | Includes only that excreta which reaches the treatment works and is treated effectively (to wastewater quality limits). Includes sewer conveyed (from municipal systems) and tanker from pit systems and septic tanks) excreta which reaches the treatment works and is treated to quality limits. |

The GEMI (2016c) *Step-by-step Monitoring Methodology for Indicator 6.3.1* indicates that the domestic wastewater which is included in the indicator will include the faction of wastewater emanating from households using a basic sanitation services whose excreta:

- Are carried through a sewer distribution systems to a treatment location and are treated to an agreed level of quality limits; or
- Are emptied from septic tanks or latrines in a safe manner and transported to the treatment location and are treated to an agreed level of quality limits; or
- Remain on site, stored in a safe manner (e.g. in a twin pit latrine; safely sealed VIP pit) until safe to handle and safely re-use.

Monitoring safely treated domestic wastewater, according to the GEMI (2016c) *Step-by-step Monitoring Methodology for Indicator 6.3.1,* will require the tracking of treatment of households' wastewater and excreta along the entire sanitation chain – containment, to end-use/disposal (Figure 53). This will highlight the faction of domestic wastewater which was safely treated in-situ; did not reach the treatment location; was dumped into the environment; reached the treatment location but is not treated to require specification and reached the treatment location and was safely treated at the treatment location. Where the wastewater/content was not safely treated were shown as the red-streams in Figure 53, while the flows of safely contained, emptied, transported, treated and used/disposed wastewater were shown as the green-streams. A country ideally would want all the flows to be green-streams or at least to maximise these green-streams in their pursuit of SDG Target 6.3.

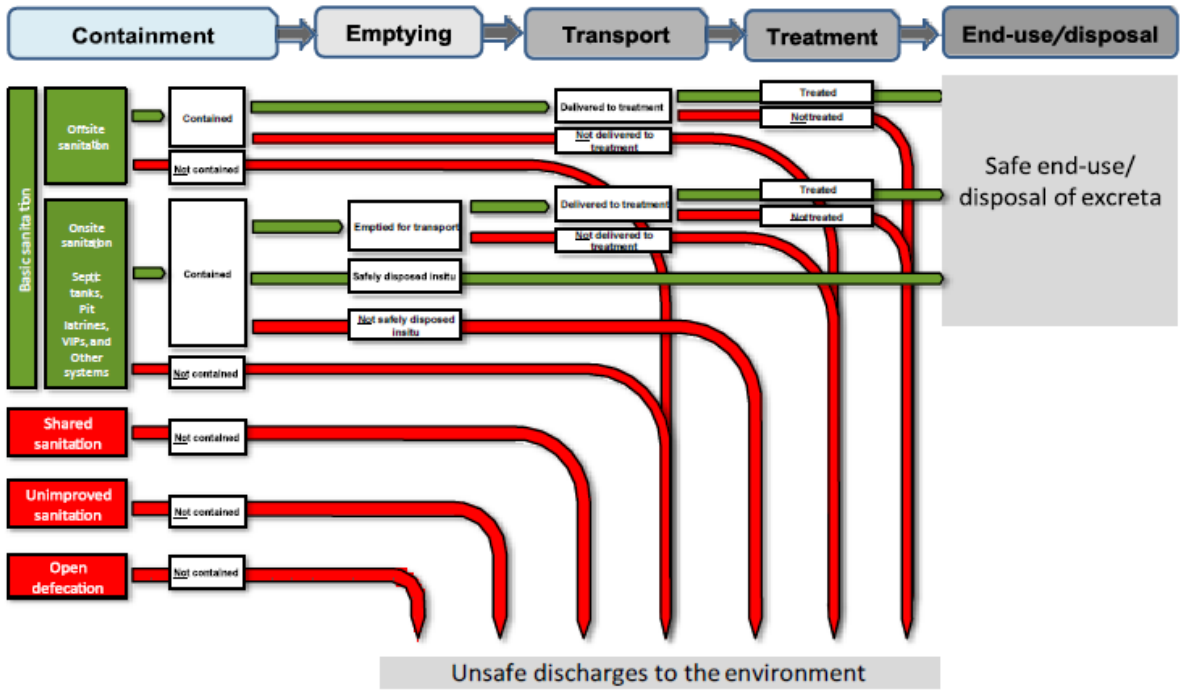


Figure 53: sanitation chain – mass-balance framework of excreta flows (taken from GEMI, 2016c)

This component of SDG Target 6.3 would be monitored and reported by SDG Indicator 6.3.1 *proportion of wastewater safely treated*.

**Summary:** Monitoring and reporting progress with SDG Indicator 6.3.1 *proportion of wastewater safely treated* would directly monitor and report the "wastewater" component of SDG 6.3, as the safe treatment of wastewater would contribute to the SDG Target.

### 5.4.8 Monitoring" Increasing recycling"; monitoring 'safe"; monitoring 'reuse' and monitoring 'globally'

The UN-Water (2016a) define these components of SDG Target 6.3 as:

- Increasing recycling : Implies increasing the on-site reuse of water within the same establishment or industry

- Safe: water has undergone sufficient treatment combined with non-treatment barriers to protect human health, for the intended use (as described in the 2006 WHO Guidelines for safe use of wastewater, excreta and greywater)
- Reuse: wastewater supplied to a user for further use, with or without prior treatment (for example us of household wastewater in agriculture), excluding the recycling of water within the same establishment
- Globally: increasing recycling and safe reuse at the global scale, allowing for differentiated efforts at the national and regional scales, focusing efforts on water-scarce regions

The SDG Target 6.3, although having a strong recycling and safe use component, would not track progress with these imperatives by SDG Indicator 6.3.1 *proportion of wastewater safely treated*.

**Summary:** Monitoring and reporting progress with SDG Indicator 6.3.1 *proportion of wastewater safely treated* would not directly monitor and report the "increasing recycling", "safe" "reuse" or globally" components of SDG 6.3. New indicator would be required to address this need.

### 5.4.9 Summary of Component of SDG Target 6.3 which were monitored and reported by SDG Indicator 6.3.1.

As shown in the previous section, only some of the component of the SDG Target 6.3 by 2030, **improve water quality** by **reducing pollution**, **eliminating dumping** and **minimizing release of hazardous chemicals and materials**, **halving the proportion** of **untreated wastewater** and substantially **increasing recycling** and **safe reuse globally**. A summary of the components which were or were not report by SDG Indicator 6.3.1 were shown in Table 40.

**Table 40: Hygiene component of SDG Target 6.3 which were monitored and reported by SDG Indicator 6.3.1. (√ = component fully reported by the indicator; X = component not reported by the indicator; Some = some aspects of the component reported by the indicator)**

| Target Text | Normative interpretation | Reported by the Indicator |
|---|---|---|
| By 2030, improve **water quality** by | Implies achieving adequate quality of receiving water bodies so that they do not present risks to the environment or human health | **Address by Indicator 3.1.2** |
| Reducing **pollution** | Implies minimizing the generation of pollutants at source and reducing the discharge of polluting substances from point sources (for example, wastewater outlets form economic activities and households) and non-point sources (for example, urban and agricultural runoff | √ |
| Eliminating **dumping and** | Implies ending all inadequate disposal of waste (solid and liquid, for example, leachates from poorly managed solid waste) | **X** |
| Minimizing release of **hazardous chemicals and materials** | Implies reducing the generation, use and discharge of hazardous substances, as defined and listed in the conventions of Basel, Rotterdam and Stockholm | **X** |
| **Halving the proportion** of | Implies halving the proportion of wastewater that is untreated, generated by households and all economic activities (based on International Standards Industrial Classification (ISIC) Rev. 4) some economic activities are of special relevance due to high wastewater generation, including agriculture, mining and quarrying manufacturing, electricity and sewage | √ |

| Target Text | Normative interpretation | Reported by the Indicator |
|---|---|---|
| **Untreated** | Treatment implies any process for rendering wastewater fit to meet applicable environmental standards or other quality norms. Treatment can be categorised into primary, secondary and tertiary treatments (and further by mechanical, biological and advanced technology treatments) | √ |
| **Wastewater** | Discarded water that is no longer required by the owner or user including discharges to drains or sewers for treatment or direct discharges into the environment, as well as water reused by another user without further treatment | √ |
| And **increasing recycling** | Implies increasing the on-site reuse of water within the same establishment or industry | **X** |
| And **safe** | Implies water has undergone sufficient treatment combined with non-treatment barriers to protect human health, for the intended use (as described in the 2006 WHO Guidelines for safe use of wastewater, excreta and greywater | **X** |
| **Reuse** | Implies wastewater supplied to a user for further use, with or without prior treatment (for example us of household wastewater in agriculture), excluding the recycling of water within the same establishment | **X** |
| **Globally** | Implies increase recycling and safe reuse at the global scale, allowing for differentiated efforts at the national and regional scales, focusing efforts on water-scarce regions | **X** |

# 6 DESIGNING AN EFFECTIVE AND EFFICIENT WATER SUPPLY, SANITATION AND HYGIENE (WASH) MONITORING FRAMEWORK FOR SOUTH AFRICA

A key objective of this study was to develop a Monitoring and Reporting Framework to address South Africa's future national and international water services monitoring and reporting obligations. The previous sections of the report provided an overview of South Africa's water supply, sanitation and hygiene monitoring and reporting between 1994-2015, a brief overview of the shifting of monitoring imperatives from the MDGs to the SDGs (2015-2016) and an overview of South Africa's future national and international water services monitoring and reporting obligations focussing on the SDGs, GLAAS, AMCOW and national reporting imperatives. This chapter of the report provides an overview of monitoring frameworks, including their various requirements and types of frameworks, culminating in a Water Supply, Sanitation and Hygiene Monitoring and Reporting Framework to address South Africa's future national and international water services monitoring and reporting obligations.

## 6.1 WHAT IS A MONITORING FRAMEWORK?

A Monitoring Framework very often takes the form of a hierarchical model, structuring policy/programme/project goals, strategic objectives and indicators in a logical manner.

The Monitoring Framework provides the 'logic' of the monitoring and reporting system in that it links indicators to specific strategic objectives and ensures that strategic objectives address a specific need of the policy/programme/project goal. A monitoring framework is thus usually based on a hierarchal structuring of a goal/s, strategic objectives and targets, demonstrating the relationships between these (Figure 54). Hierarchy theory suggested that higher levels of organization in the framework (goal) would incorporate and constrain the behaviour of lower levels of the framework (indicators) (Noss, 1992). The importance of a higher-order imperative does not however suggest that monitoring be limited to higher levels (Noss, 1992). The hierarchy of the monitoring framework should be linked both vertically and horizontally. Linking horizontally prevents overlap of the intentions of objectives; while linking vertically ensured that the lower levels of the hierarchy were relevant and directly related to the level above.

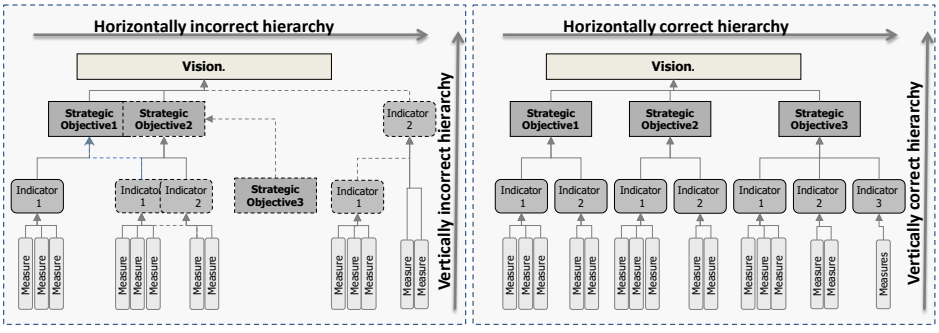


Figure 54: (left) Incorrect Monitoring Framework hierarchy (left diagram) showing overlaps in objectives and indicators and incorrect relationship between indicators and objectives. (right) Correct Monitoring Framework hierarchy (right diagram) showing no overlap

The use of a hierarchical framework in designing a WASH Monitoring Framework for South Africa had a number of advantages, including:

1. The framework facilitates the capturing and reporting of the "big picture" of WASH sector intents in South Africa.
2. The framework articulates policy goals and measurable short, medium and long-term objectives, in a systematic and structure manner
3. The hierarchical framework helps to develop sound monitoring and evaluation plans and implementation of monitoring and evaluation activities
4. The hierarchy structure of the framework defines relationships between inputs, activities, outputs, outcomes and impacts, and thus demonstrate how activities will lead to desired outcomes and impacts, especially when resources are not available to conduct rigorous impact evaluations.
5. The hierarch displays relationships graphically.
6. The hierarch framework facilitates recognition that the effects of stresses can be expressed in different ways at different levels in the hierarchy, namely the effects at one level in the hierarchy can be expected to resonate through the other levels of the framework, i.e. linking cause-effects.
7. Structuring WASH monitoring in this conceptual framework facilitates the selection of indicators that represent the many aspects which warrant attention in monitoring of the water sector of South Africa.

Various frameworks could be applied in the design of the WASH Monitoring Framework for South Africa, including, i.e. SDG Framework, LogFrame, DPSIR (Driver, Pressure, State, Indicator, Response) and the Results-based frameworks. A summary overview of each framework types is provided in the following sections.

### 6.1.1 SDG Hierarchical Monitoring Framework

It was anticipated that a sustainability framework would be applied to monitoring the WASH sector in South Africa, as these require a unique sustainability framework structure and indicators and support the UN SDG Monitoring Framework.

The UN SDG Monitoring Framework was structured in a hierarchal framework of goals, targets and indicators. The framework consisted of 17 goals, each linked to one or more targets (169 in total) which in-turn were linked in a hierarchical manner with global indicators (231 in total) (Figure 55). The framework was thus structured in a manner that each goal has a clear intent. There are however cross-links between goals, i.e. linkages between the poverty, health and water goals. The UN SDG Monitoring Framework was thus not horizontally explicit, with the achieving of one goal being reliant on the addressing of one or more of the other goals. In designing an effective and efficient monitoring framework this should be avoided. The framework would rather, for example, set universal and equitable access to water as a strategic objective of addressing the health and poverty goals. Each level in the SDG Hierarchical Monitoring Framework does however have a specific purpose, namely:

- **SDG Goals:** effectively **aspirations**, with the SDG Goals being a set of seventeen aspirational "Global Goals". The goals guide future actions and interventions, globally and nationally, in areas that are of critical importance for humanity and the planet (the areas shown by the 17 Goals in Figure 55).
- **SDG Targets:** could be defined as a specific, planned level of a result to be achieved within an explicit timeframe with a given level of resources. Targets are measured by indicators. Each SDG had one or more target which needed to be achieved, with the assumption that achieving the targets would results in addressing the aspirational SDG.
- **SDG Indicators:** an indicator can be defined as *quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor* (OECD, 2002). The SDG indicators have two purpose; (1) to ensure that "management" stays on course and (2) to hold all stakeholders accountable for the SDGs (SDSN, 2015). The SDG indicators are designed to track the SDGs at local, national, regional, and global levels. For management purposes, the indicators need to be accurate and frequent, reported at least once per year (SDSN, 2015). The global SDG indicators were developed to be SMART, using the selection criteria of relevance, methodological soundness and measurability (see Section 5.2.1 for more discussion on the SMART criteria).

The SDGs, like the MDGs, were thus developed and reported based on a hierarchical monitoring framework. As mandated by the General Assembly in its resolution 70/1, the global indicator framework is envisaged to be "simple yet robust, address all Sustainable Development Goals and targets, including for means of implementation, and preserve the political balance, integration and ambition contained therein" (General Assembly resolution 70/1). Since many of the SDGs indicators were new or were more expansive than those of the MDGs, a baseline needed to be established for many of the indicators.


Figure 55: Hierarchy of 17 SDGs, targets and indicators (monitoring information flows from the bottom to the top of the hierarchy)

### 6.1.2 DPSIR (Driver, Pressure, State, Impact, Response) Hierarchal Framework

The most common framework used to categorising environmental indicators and sustainability indicators, which was used to categories the South African National State of the Environmental indicators, was the Organisation for Economic Co-operation and Development (OECD) adapted DPSIR (Drivers, Pressures, State, Impacts, Response) framework. The DPSIR is not in itself a monitoring framework but rather a framework for structuring indicators in a logical manner (Figure 56).

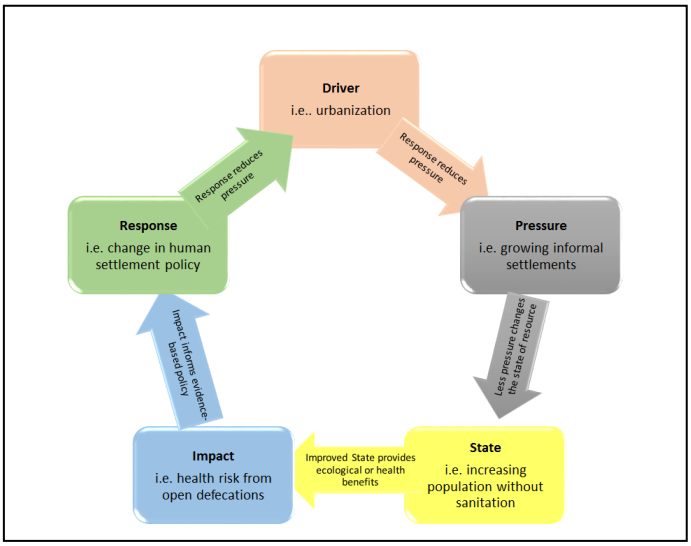


Figure 56: DPSIR model of categorizing environmental indicators

The model breaks an environmental problem or situation into various elements (drivers, state, impact, etc.), in an attempt to fully describe and understand it. Indicators were developed for each of these elements as a way of describing the status of the element. The five different types of indicators in the DPSIR model could be defined as:

- **Driver indicators:** very seldom monitored as indicators as these were the driving forces behind change in the environment and may be as a result of a combination of factors.
- **Pressure indicators**: were described by EEA (1999) as *developments in release of substances (emissions), physical and biological agents, the use of resources and the use of land. The pressures exerted by society are transported and transformed in a variety of natural processes to manifest themselves in changes in environmental conditions.* Examples of pressure indicators would be the increasing households in informal settlements without sanitation or lack of infrastructure to provide safe drinking water to a rural village.
- **State indicators:** gave a description of the quantity and quality of physical, biological or chemical phenomena in an area. State indicators may, for instance, describe the concentration of phosphorous, nitrogen and sulphur in a water resource at the point of treated wastewater from a wastewater treatment outflow or microbiological, chemical and physical compliance of water quality at a water source, i.e. tap; borehole, etc.
- **Impact indicators:** describe the impacts of a change in the state of the environment. Impacts often occur in a certain sequence: untreated wastewater entering a water source may cause pollution of the water resource (primary effect), which may in turn cause an

increase in biological oxygen demand (BOD), chemical oxygen demand (COD), total dissolved solids (TDS), and total suspended solids (TSS) (secondary effect), which may cause eutrophication of the source (tertiary impact), which could result in the loss of biodiversity.

- **Response indicators:** refer to responses by groups (and individuals) in society, as well as government attempts to prevent, compensate, ameliorate or adapt to changes in the state of the environment (EEA, 1999). Examples of response indicators are a new standard for the acceptable levels of parameter for discharge from a wastewater treatment works.

The DPSIR model was particularly suited to demonstrate cause-effect relationships of environmental impacts.

### 6.1.3 Logical Hierarchical Monitoring Framework

A logical framework or logframe is a conceptual foundation upon which a monitoring system can be built. Original developed in 1969 for the United States Agency for International Development, the logframe has become a useful tool, not only for designing Monitoring Systems but also for project planning, implementing and evaluating (Gosling and Edwards, 2003). It tests the *logic* of a plan of action by detailing how to achieve the objectives of the intervention and sets out explicit activities, resources, assumptions and clarifies risks to achieving the desired objectives. The difference between the LogFrame Hierarchical Framework and the DPSIR model discussed above is that (1) the LogFrame is a monitoring framework, not just a model for structuring various indicators, and (2) the LogFrame focusses on assessing policy, process, programmes, projects (i.e. interventions) which may require a range of indicators related to economic activity; environmental activities; social interventions; governance activities, etc., while the DPSIR model is focussed on environmental indicators.

The product of a LogFrame planning process is a log framework matrix, which articulates the intervention at four levels, i.e. goals; impacts; outcomes and activities (Figure 57).

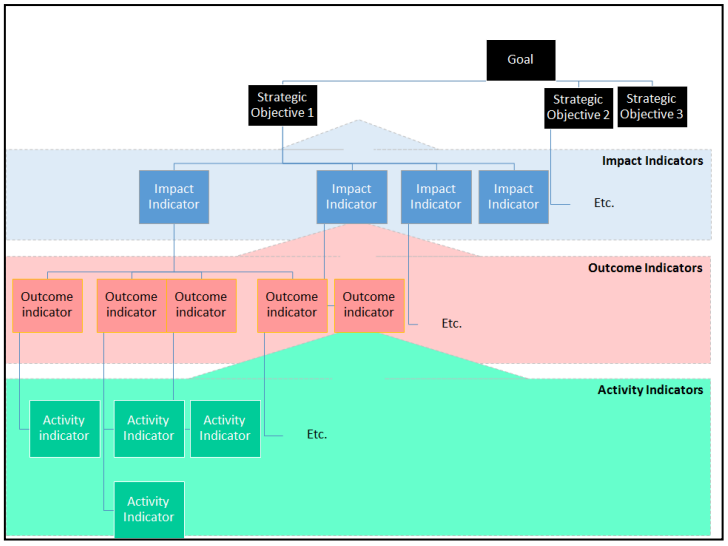


Figure 57: Hierarchal structure of a LogFrame Monitoring Framework (monitoring information flows from the bottom to the top of the hierarchy)

It is essential to understand the differences between these four levels in the logframe since the indicators to be measured under the monitoring system reflect this hierarchy. The levels of indicators in the LogFrame can be defined as:

- **Goal:** articulates the broader impacts to which the policy, programme, project, process, etc. intervention was working. The goals was similar to that of the goals in the SDG framework. A goal was the long-term (5 years or longer) objective of an intervention.
- **Strategic objectives:** the goal in the LogFrame Monitoring Framework is usually disaggregated into a number of policy, process or programme Strategic Objectives (SOs).
- **Impact Indicators:** the success of addressing the goal and strategic objectives is measured through the extent to which the intended impacts of a policy, process or programme have been achieved. Hence, each strategic objective has a number of impact indicators. Impact indicators track what the policy, programme, process, project is expected to achieve. The impact indicators articulate the medium-term (2-5 years), sustained result of a successful intervention.
- **Outcome indicators**: progress in achieving the impacts of a policy, process or programme are monitored through outcomes indicators. Outcome indicators articulate the short-term (within 1-2 years) measurable and sustainable results of the intervention,
- **Activity indicators**: the outcome of a process or programme are monitored through indicators which track the interventions/activities of the initiative. Activity indicators demonstrate how the project is going to achieve the desired results, articulating the actions to be taken in the very short term (every day, week, month or quarter) to ensure successful implementation of an interventions.

### 6.1.4 Results-Based Hierarchal Monitoring Framework

Results-based monitoring is a powerful management tool that can be used to help decision-makers track progress and demonstrate the impact of a policy, process, project programme. Where traditional monitoring frameworks such as the LogFrame are designed to answer the 'did we do it question', the results-based framework is designed to address the "so what if we did it" question of implementing an intervention. Results-based Monitoring differs from traditional implementation-focused monitoring in that it moves beyond an emphasis on inputs (i.e. financial contributions and human resources used) and outputs (i.e. events organised, people trained, people employed; taps or toilets built) to a greater focus on outcomes (i.e. equitable access to safe water and sanitation) and impacts (improved human health) of a project or programme. It provides feedback on the actual outcomes and goals and through continuous collecting and analysing of information compares how well a policy and implementation initiatives is being implemented against expected results.

Results-base monitoring usually makes use of four types of indicators; input, output, outcome and impact indicators (see Figure 58).

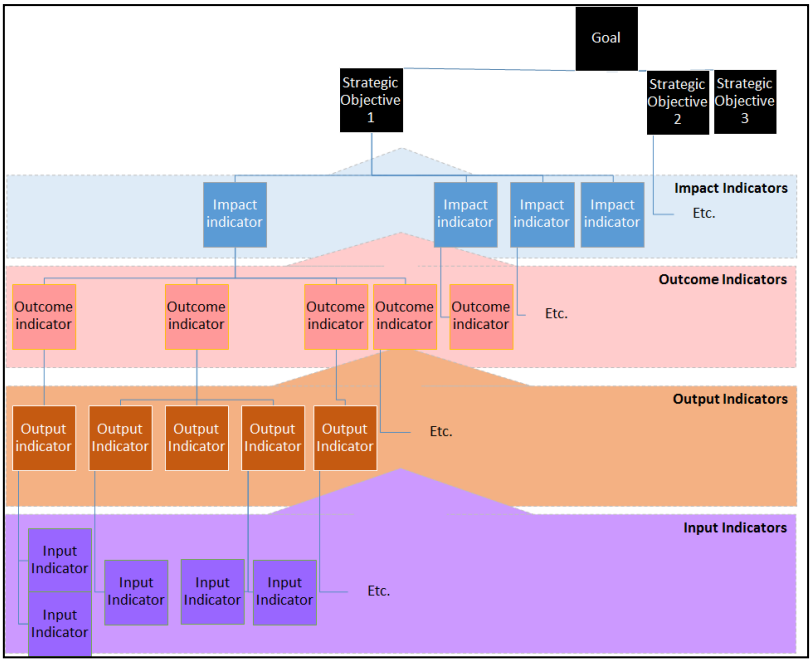


**Figure 58: Results-based Monitoring Framework hierarchy (monitoring information flows from the bottom to the top of the hierarchy**

The result-based monitoring framework utilises four levels of indicators to monitor the progress of an intervention, resulting in 6 levels in the framework including:

- **Goal:** can be defined as *the higher-order objective to which a development intervention is intended to contribute* (Kusek, and Rist, 2004).
- **Strategic/development Objectives:** *Intended impact contributing to physical, financial, institutional, social, environmental, or other benefits to a society, community, or group of people via one or more development interventions* (Kusek, and Rist, 2004).
- **Impact indicators:** impacts can be defined as *positive and negative, primary and secondary, long-term effects produced by a development intervention, directly or indirectly, intended or unintended* (Kusek, and Rist, 2004). Impact indicators track these long-term effects of a development intervention.
- **Outcome indicators:** Outcome indicators assist in answering two initiative questions: "How will we know success or achievement when we see it?, and "Are we moving toward achieving our desired outcomes?" (Kusek and Rist, 2004). These indicators monitor what are the likely or achieved short-term and medium-term effects of an intervention's outputs.
- **Output indicators:** Output indicators measure the quantity of goods and services produced and the efficiency of production (i.e. number of people served with water supply or sanitation). These indicators can be identified for programs, sub-programs, agencies, and multi-unit/agency initiatives.
- **Input indicators:** measure the human and financial resources that are allocated to a particular intervention (i.e., number of community health workers). These indicators can also include measures of characteristics of target populations (i.e. number of consumers eligible for Free Basic Water Supply).

By measuring results-based indicators on a regular basis decision-makers can determine whether the policy and implementation initiatives are on track, off track, or even doing better than expected against the targets set for each strategic objective in the Monitoring Framework.

This provides an opportunity to make adjustments, correct course, and gain valuable experience and knowledge of implementation of this type of biodiversity programme (Palmer Development Group, (2004).

Historically, the South African government has tended to only monitor financial spending and other quantitative outputs of policy, which generally disregarded qualitative and outcome/impact measures. This has however change since 2005, when South Africa embarked on developing and implementing a Government-wide Monitoring and Evaluation (M&E) System (GWM&E) for the public sector of the country (Presidency, 2007).

The GWM&ES was a performance (results-based/outcomes-based) monitoring and evaluation system designed to provide performance information to government. The system seeks to determine whether government was targeting resources (human, financial, biophysical and economic) in the most effective, efficient and sustainable manner to improve the life of South Africans. The GWM&E system took an outcomes approach (result-based approach) to monitoring and evaluation, ensuring that the 'what, how and by when' of what the government wants to achieve is clearly articulated (Presidency, 2011). Clarifying these outcomes and the underlying inputs, outputs and activities, provides a clear and structured manner for being able to track, from project to national, the progress of government in achieving its national imperatives. The GWM&E system thus measures the performance of the public sector using result-based monitoring, with indicators categorised into a hierarchal framework of inputs, activities, outputs, outcomes and impacts based the purpose (Figure 59). This framework, a slight expansion of the standard results-based hierarchies, included activity indicators – requiring monitoring of progress of actual policy, programme, project, etc. activities during an intervention. This does not imply that all interventions in the country should monitor all levels, some intervention may choose to focus on monitoring outcomes and outputs, with evaluations being carried out through-out the policy, programme, project, progress, etc. to determine the impact of the intervention. The key aspect of the GWM&E Monitoring Framework was to show change at one level influencing the level above and vice versa – this can show the most effective interventions and those interventions which require additional resource to ensure progress.

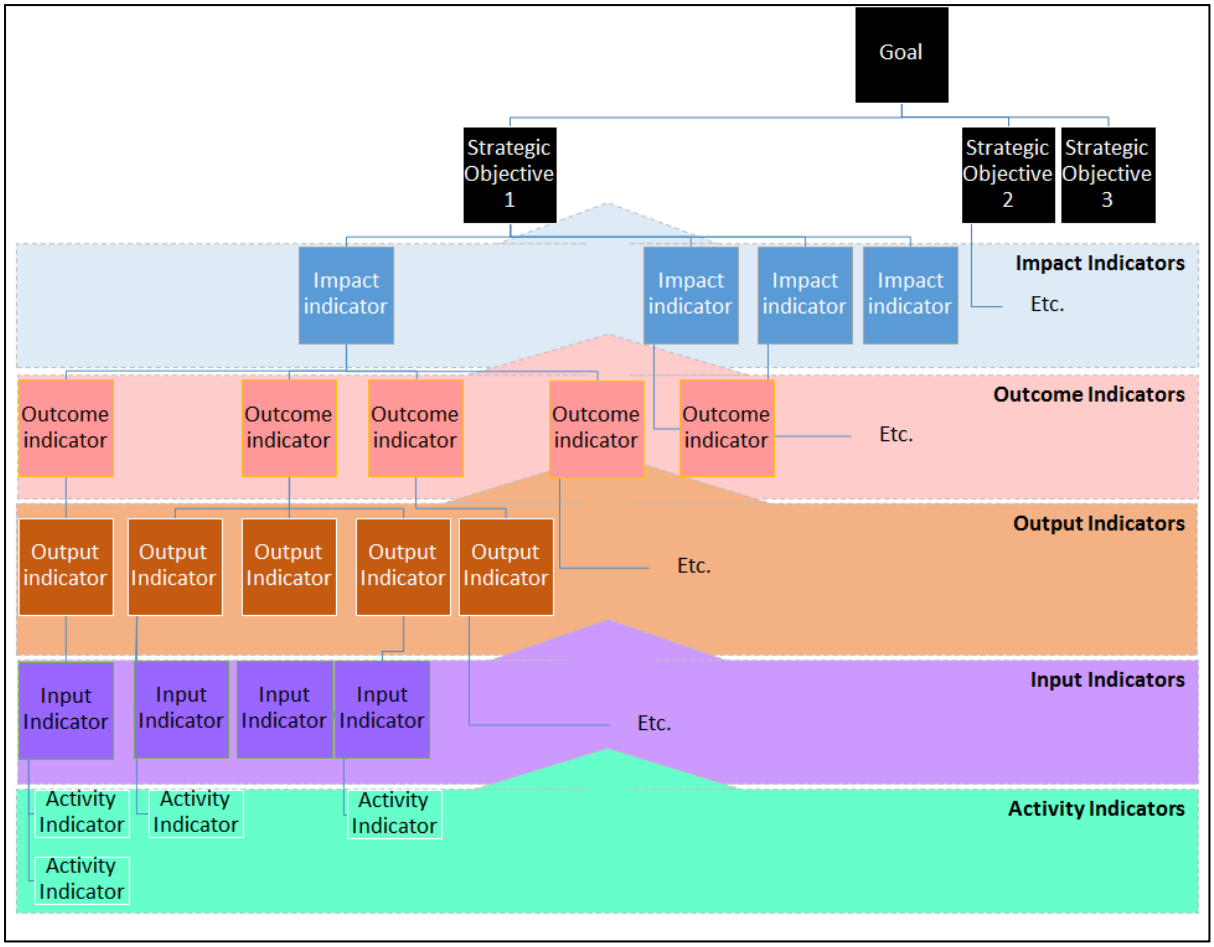


Figure 59: Results-base hierarchy in the South Africa GWM&E framework

## 6.2 Components of an Effective and Efficient Monitoring Framework

An effective and efficient monitoring and reporting framework provides a consistent manner for institutional measuring and reporting of performance, facilitating evidence-based decision-making processes (DELWP, 2014). The standard criteria for assessing the quality of a monitoring framework include (DELWP, 2014):

- ***Utility*** – Will the framework serve the practical information needs of intended users;
- ***Feasibility*** – Were the methods, sequences, timing and processing procedures proposed realistic, prudent and cost effective;
- ***Propriety –*** Would the monitoring framework activities be conducted legally, ethically and with due regard for the welfare of those affected by its results;
- ***Accuracy*** – Would the monitoring outputs reveal and convey technically adequate information.

Components of an effective and efficient monitoring and reporting framework would include:

- A logical framework for systematic structuring of indicators (see Section 6.1 above);
- SMART indicators with scientifically defensible data collection tools and methods; data analysis protocols and communication procedures (Section 6.2.1);
- Achievable, realistic targets (Section 6.2.2);
- A credible baseline information for each indicator (Section 6.2.3).

### 6.2.1 Selecting Indicators for an Effective and Efficient Monitoring System

The first requirements of an effective and efficient monitoring framework is a logical hierarchy of indicators, targets, strategic objectives and a goal/vision. This shows the links between a change in one level and an effect on the level above. The second key requirement of an effective and efficient monitoring framework is that of a suite of indicators which can demonstrate progress and achievement in implementation of a policy, programme, process, project, etc. In most instances, national monitoring would be undertaken through measuring an indicator /index which demonstrate change. Noss (1992) specifies that an indicator should be:

*(1) sufficiently sensitive to provide an early warning of change;*
*(2) distributed over a broad geographical area, or otherwise widely applicable;*
*(3) capable of providing a continuous assessment over a wide range of stress;*
*(4) relatively independent of sample size;*
*(5) easy and cost-effective to measure, collect, assay, and/or calculate;*
*(6) able to differentiate between natural cycles or trends and those induced by anthropogenic stress; and*
(7) *relevant to significant phenomena.*

Since no single indicator would have all of these properties, a suite of complementary indicators is often required. Three approaches have commonly been used to determining these complementary indicators, namely SMART, CREAM and SPICED (Table 41). These acronyms stand for:

- **SMART = S**pecific, **M**easurable, **A**chievable (or acceptable), **R**elevant (or reliable) and **T**ime-bound;
- **CREAM = C**lear, **R**elevant, **E**conomic, **A**dequate and **M**onitorable; and
- **SPICED = S**ubjective, **P**articipatory, **I**nterpreted and communicable, **C**ross-checked and compared, **E**mpowering, and **D**iverse and disaggregated.

Each indicator in the monitoring framework should be assessed against the criteria of one of these models. Table 41 shows the 'question' which should be asked for each criteria when assessing the indicator. Very often, one or more of the criteria may be the deciding criteria. For example, the SDG indicators selection used three of the criteria, namely relevance, methodological soundness and measurability to determine whether the indicator was effective in monitoring progresses towards a SDG Target and Goal.

Table 41: A critical comparison of the SMART, CREAM and SPICED approach (Adapted from Larson and Williams 2009)

| S.M.A.R. T | C.R.E.A.M (Kusek and Rist, 2004) | S.P.I.C.E.D. |
|---|---|---|
| **Specific:** is the indicator concrete, detailed, well defined? | **Clear:** is the indicator precise and unambiguous? | **Subjective:** A special view-point, unique insight or experience expressed by a stakeholder might have a high value for the organisation. What might be seen by some as 'anecdotal' becomes critical data because of its source |
| **Measurable:** can the indicator be measured, i.e. in numbers, quantity, comparison? | **Relevant:** is the indicator appropriate to the goal and the intent of the initiative? | **Participatory:** Indicators were developed collaboratively between the organisation and its stakeholders |

| S.M.A.R. T | C.R.E.A.M (Kusek and Rist, 2004) | S.P.I.C.E.D. |
|---|---|---|
| **Achievable:** is the indicator (target) achievable and attainable without expecting too much? | **Economic:** can the progress and achievement of the indicator be monitored at a realistic cost? | **Interpretable:** Indicators need to be set as proxies for tracking of the achievements related to the specific indicators. Interpretation and translation of an indicator into a measure of progress towards the indicator or goal needs to be pre-determined |
| **Realistic/relevant:** can the progress and achievement of the indicator be monitored within available resource, human and financial? Is the indicator appropriate to the goal and the intent of the initiative? | **Adequate:** can the indicator be monitored in a manner that shows change in performance? | **Communicable and comparable:** Indicators set need to be easy to communicate and relevant. They also need to be comparable over time and space, and between different groups of stakeholders |
| **Time-bound:** can the indicator (target) be achieved within a defined timeline? | **Monitorable:** is the indicator amenable to independent validation? | **Empowering:** Stakeholders were actively involved in the process of setting monitoring goals and assessing progress. This involvement and learning from the process contribute to their empowering |
| | | **Disaggregated:** Different groups of stakeholders might be interested in different types of indicators. Therefore, sets of indicators might need to be disaggregated to allow for this pluralism |

### 6.2.2 Indicator targets

Another key component of an effective and efficient monitoring framework is the selection of performance targets. Performance targets are an expressions of a specific level of performance that the institution, programme or individual is aiming to achieve within a given time period. The performance targets are often relative to current baselines. A target was defined as *". . . a specified objective that indicates the number, timing and location of that which is to be realized"*(IFAD 2002).

One method for determining an indicator target was to assess the baseline (current state) for the indicator, agree on the desired level of improvement required (taking into consideration available resources) and then set the target (Rust, 2004). There were a number of important factors to consider when selecting indicator targets; namely (Rust, 2004):

- needing a baseline to understand the starting point for monitoring the indicator;
- understanding the resource constraints to achieving the target (i.e. human and financial constraints);
- using realistic timelines – long-term targets have a number of unknown influences which make them more difficult to achieve;
- noting the political influence of targets – governments and other stakeholder could be held to account for achieving/not achieving a particular target;
- recognising desired outcomes were longer term, complex, and not quickly achieved – targets should thus be set as short-term objectives on the path to achieving an outcome; and
- being flexible in setting targets, as resources may change at any point in time.

Indicator targets should be specified prior to the beginning of a development intervention so that the institution and its managers know what they are responsible for, and can be held accountable to the end of the intervention cycle.

### 6.2.3 Indicator baseline

The final component of an effective and efficient monitoring framework is a baseline value for each of the indicators in the framework. A baseline could be defined as *an analysis describing the situation prior to a development intervention, against which progress can be assessed or comparisons made* (Rust, 2004). Progress cannot be measured to the future (set targets) without first establishing a baseline.

Establishing baseline data on indicators is crucial in determining current conditions and in measuring future performance (Rust, 2004). The indicator progress is measured from this baseline, providing important directional or trend data – demonstrating whether the intervention is on track towards achieving output; outcomes or impact and thus interventions objectives and goals.

An important requirement of the SDG indicators was that since many of the SDGs indicators were new or were more expansive than those of the MDGs, a baseline needed to be established for many of the indicators. A baseline, according to UN-Water, was a clearly defined reference in time from when implementation of the SDGs would begin and progress measured (UN-Water, undated). For SDG 6, the international objectives was to compile sufficient country data to establish a global baseline for each of the indicators in SDG 6 by 2018 (UN-Water, undated).

## 6.3 An Effective And Efficient Water Supply, Sanitation And Hygiene (WASH) Monitoring Framework For South Africa

With the new global development agenda being guided by the SDGs, this study assumed that the SDG hierarchal monitoring framework discussed in Section 5.1.1 above was the most effective and efficient hierarchy for monitoring of WASH services in South Africa in the near future. Hence, this framework was utilised as the basis for the WASH Monitoring Framework in the study. The assumption in this framework was that the SDGs were effective and efficient goals for monitoring sustainable development – hence these goals were not changed in the South Africa WASH Monitoring Framework. The SDG 6 was the top-level goal (intent) of the framework which would be utilised to monitor and report progress in the WASH sector of South Africa (Figure 60).

The second level of the hierarch were the targets. Based on the assumption that the SDG targets were the most effective – widely consulted and international agreed – targets to which South Africa WASH sector should be progressing, the core targets within the South Africa WASH Monitoring Framework were those set for SDG 6. These targets were however complemented by targets set by other interventions, i.e. national targets which related to a SDG 6 are added to the specific goal in the framework. These complementary targets were selected from these initiatives to address gaps which have been highlighted in the SDG 6 such as financial and equity targets or to address nationally specific targets such as the national universal access targets for South Africa.

The third level in the hierarchy was that of the indicators. As noted previously, the SDG 6 WASH indicators were outcome indicators, i.e. indicator 6.1-6.3 were outcome indicators of interventions to provide access to safely managed water supply, sanitation and hygiene in a country. South Africa was monitoring and reporting these indicators (using nationally-specific means of measurement) and would continue to do so until 2030. These indicators thus formed the core of the outcome indicators in the South African WASH Monitoring Framework.

As noted in Section 5.1.3 and Section 5.1.4 above there were however, a number of other types of indicators, including input indicator and output indicators, which should be utilised to monitor and report progress towards universal and equitable access to water supply, sanitation and hygiene in South Africa. Many of the future monitoring efforts in the country, including Blue Drop, Green Drop, No Drop, National Benchmarking Initiative, NDP and MTSF, National Treasury and policy imperatives, focus on measuring, monitoring and reporting input and output indicators for the WASH sector. These indicators monitor and report the state of the enabling environment which supports the achieving of universal and equitable access to safely managed water supply, sanitation and hygiene services. Hence, these indicators were also included in the South African WASH Monitoring Framework.

Finally, certain gaps were identified in the SDG Monitoring Framework (i.e. financial monitoring; equity monitoring), hence indicators were added to the South African WASH Monitoring Framework. Section 6 outlined the gaps which were identified in the SDG Monitoring Framework. These indicators were however, taken for existing international and regional monitoring efforts including GLAAS; AMCOW, etc. The various indicators included in in the South African WASH Monitoring Framework were demonstrated by different colour boxes (Figure 60).

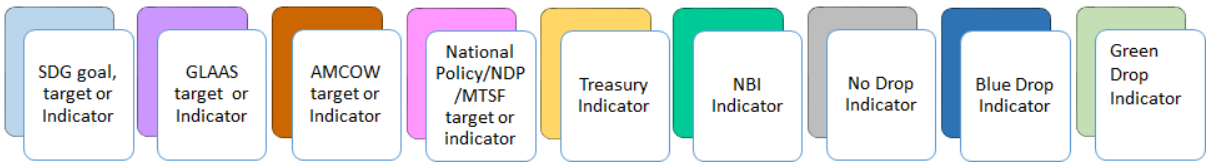


Figure 60: Colour coding of indicators in the South African WASH Monitoring Framework

Goals, targets and indicators in the WASH Water Monitoring Framework were thus colour-coded based on their source, e.g. SDG goals, targets and indicators were blue, while AMCOW indicators are pink (see Figure 61). The WASH Monitoring Framework utilities was a hierarchical structure, shown in Figure 61, of SDG 6; targets from various monitoring efforts including the SDG 6 targets and indicators from a range of national, regional and international WASH monitoring initiatives. Reading Figure 61 from right to left, improving the input indicators of the various monitoring initiatives would demonstrate an improvement in the enabling environment (i.e. financial; policy; governance; human resource) to improve the outcome indicators (i.e. equitable access; safe water supply; hygienic sanitation) of WASH in South Africa. The input indicators monitor key enablers of achieving the WASH outcomes both nationally and internationally, thus achieving crucial developmental targets.

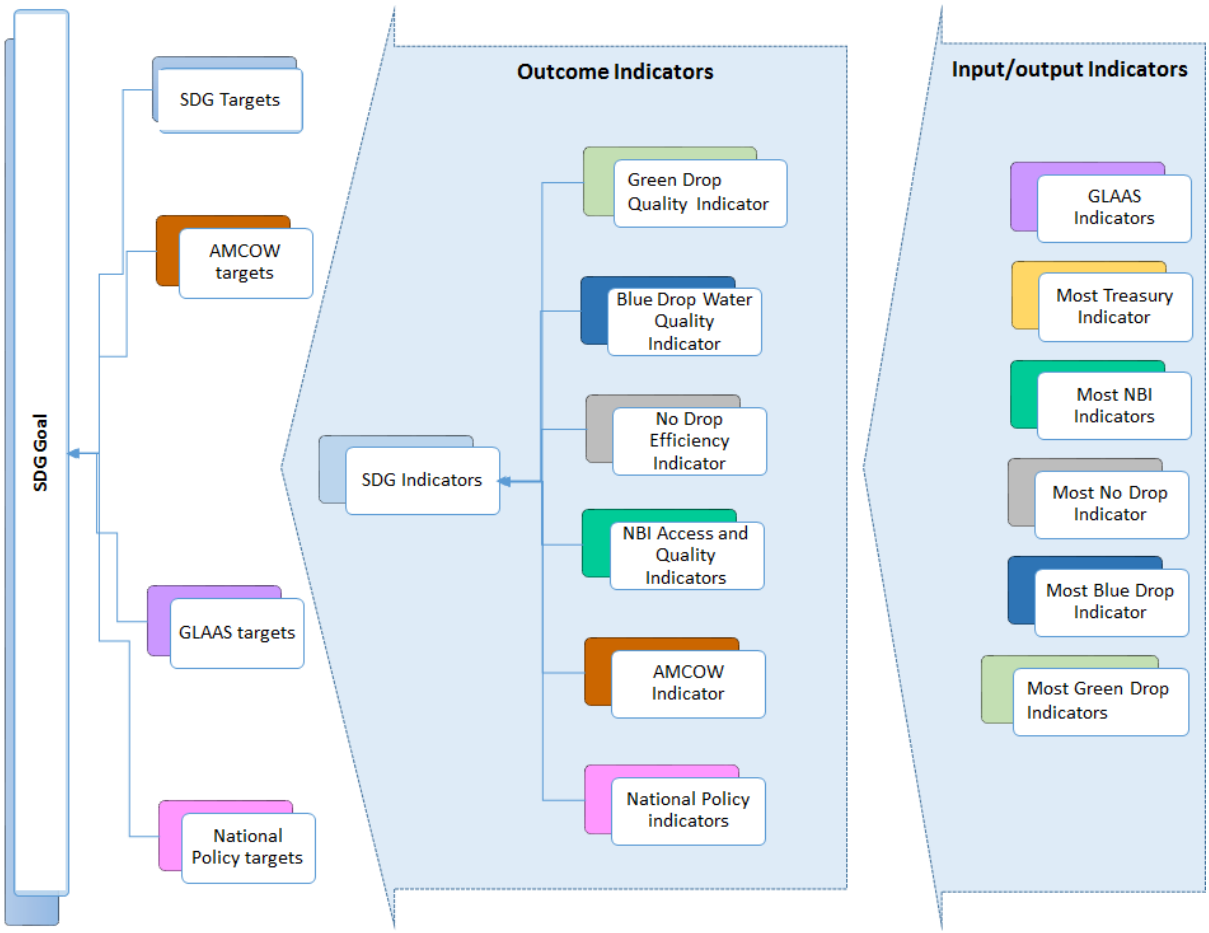


Figure 61: Monitoring Framework utilized in this Research to determine an effective and efficient water sector

# 7 APPLYING THE WASH MONITORING FRAMEWORK IN SOUTH AFRICA

Noting the future WASH monitoring and reporting requirement for South Africa (Section 4) and the gaps in current WASH monitoring and reporting requirements (Section 5), the WASH Monitoring Framework which was designed in Section 6 was utilised to provide a Monitoring Framework for Safely Managed Water Supply Service in South Africa (Section 7.1.1.), a Monitoring Framework for Safely Managed Sanitation Services in South Africa (Section 7.1.2) and a Monitoring Framework for a Basic Hygiene Service in South Africa (Section 7.1.3). The framework provides the indicators would should be monitored and reported to address national and international goals and targets for each of these WASH components.

### 7.1.1 A Monitoring Framework for Safely Managed Water Supply Service in South Africa

Section 5.1 demonstrated that a single indicator, **SDG Indicator 6.1.1** ***Proportion of population using safely managed drinking water services*** was not sufficient and demonstrated gaps in reporting of **SDG Target 6.1:** ***By 2030, achieve universal and equitable access to safe and affordable drinking water for all.*** To successfully monitor and report progress in universal and equitable access to a safely managed water supply, countries would need to develop indicators to monitor and report at least xx component of the target, namely:

1. **Universality** – requires additional indicators for access for households and all public sites;
2. **Equity** – requires new indicators for access based on gender (male/female), age (pensions/children), disability, socio-economic status (household income level), settlement area (urban/rural)
3. **Accessibility** – requires addition indicators for sufficient availability and acceptability of drinking water supply
4. **Safe** – requires the current SDG indicator 61.1. which already comprehensively addresses this component
5. **Affordability** – requires new indicator of affordability of safely managed water supply services provided
6. **Drinking water for all** – requires indicators as described for equity above

Combining these indicator needs and the current SDG Indicator 6.1.1 a Monitoring Framework for Safely Managed Water Supply Services in South Africa was developed. The Monitoring Framework for Safely Managed Water Supply Services in South Africa was shown in Figure 62. Figure 62 showed that it was necessary to continue to monitor and report the enabling components which are require to achieve the SDG Target 6.1. *By 2030, achieve universal and equitable access to safe and affordable drinking water for all.* These enabling component related to ensuring that the management capabilities and systems are developed and in place, the financial and other resource inputs are available to achieve the target and the – currently reported through some of the GLAAS, Blue Drop and No Drop, Benchmarking; NDP and MTSF, and National Treasury indicators for water supply.

Monitoring Framework for Safely Managed Water Supply Services in South Africa, shown in Figure 62, was also developed based on current outcome indicators (i.e. such as the SDG indicator) which the country was committed to monitoring and report. Where no indicators

were available for the above mentioned components of water supply, new indicators are recommended. The outcome indicators shown in the Monitoring Framework for Safely Managed Water Supply Services in Figure 62 shown the outcome indicator number which should be reported. This indicator number is linked to Table 42 which provides details of the actual indicators and its source.

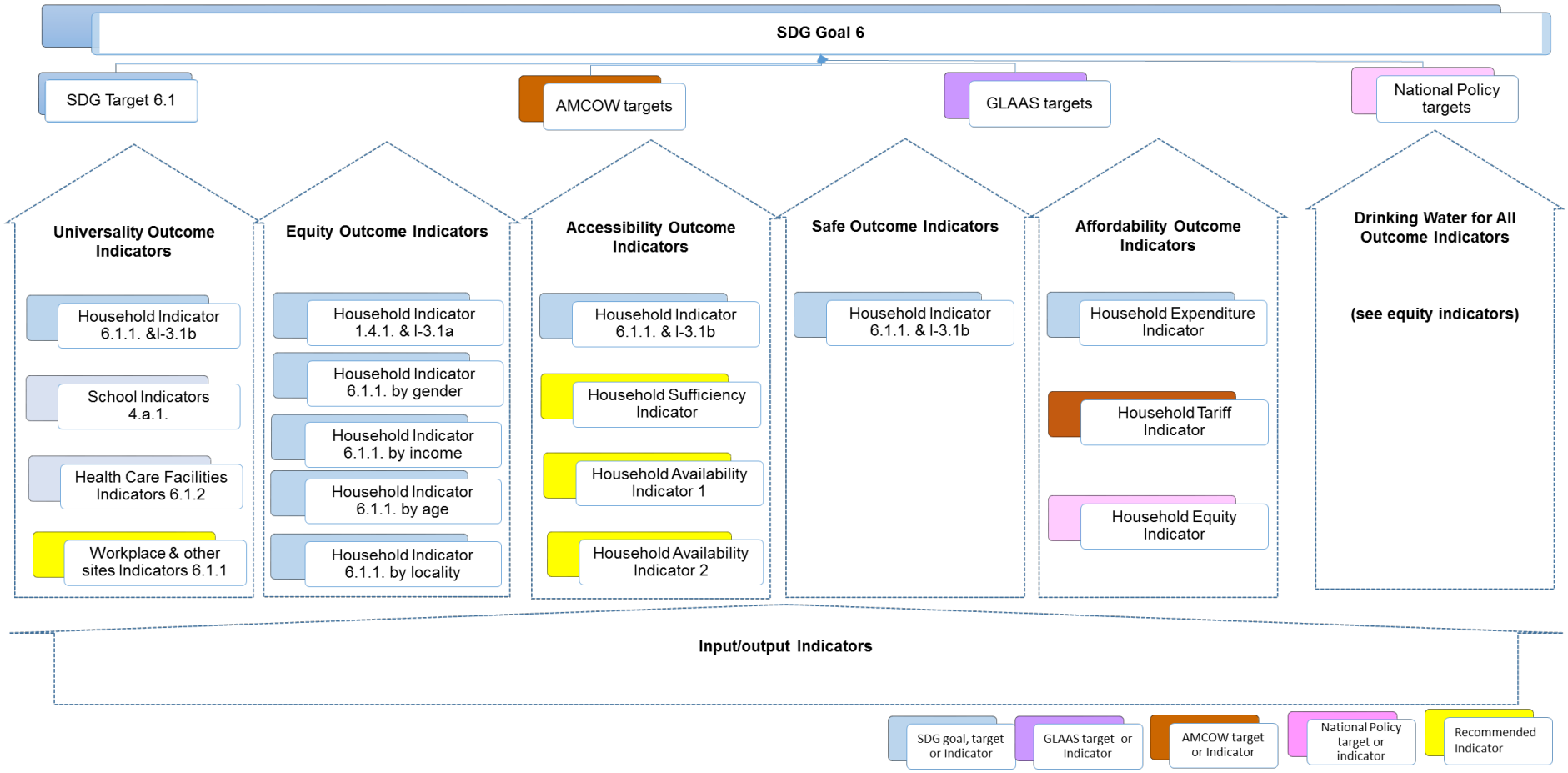


Figure 62: Monitoring Framework for Safely Managed Water Supply Services for South Africa.

Note: Figure 62 should be read from the bottom up, with the successful attainment of input/output indicators contributing to achieving the outcome indicators, which in turn will facilitate the achieving the water supply targets and goals for the country.

Table 42: Indicators recommended in the Monitoring Framework for Safely Managed Water Supply Services for South Africa

| Component | Indicator No. | Indicator | Source |
|---|---|---|---|
| **Universality** | Household Indicator 6.1.1. & I-3.1b | SDG Indicator 6.1.1. Proportion of population using safely managed drinking water services | SDGs |
| | | I-3.1b: Percentage of population using safely managed drinking water services (SDG-6.1.1) | AMCOW |
| | School Indicators 4.a.1. | SDG Indicator 4.a.1: Proportion of schools with access to (e) basic drinking water | Sustainable Development Goals |
| | Health care facilities Indicators 6.1.2. | SDG Recommended Indicator: Proportion of health care facilities with access to basic drinking water | SDGs |
| | Workplace Indicators 6.1.3. | Proportion of workplaces with access to basic drinking water | Recommended as future indicator |
| **Equity** | Household Indicator 1.4.1 & I-3.1a | Indicator 1.4.1: Proportion of population living in households with access to basic services | SDGs |
| | | I-3.1a: Percentage of population with access to a basic drinking water service | AMCOW |
| | Household Indicator 6.1.1. by gender | Proportion of female/male headed households using safely managed drinking water services | Recommended as future indicator |
| | Household Indicator 6.1.1. by income | Proportion of households per household income quantile using safely managed drinking water services | Recommended as future indicator |
| | Household Indicator 6.1.1. by age | Proportion of population per age category using safely managed drinking water services | Recommended as future indicator |
| | Household Indicator 6.1.1. by locality | Proportion of the urban/rural using safely managed drinking water services | Recommended as future indicator |
| **Accessibility** | Household Indicator 6.1.1. | SDG Indicator 6.1.1. Proportion of population using safely managed drinking water services | SDGs |
| | | I-3.1b: Percentage of population using safely managed drinking water services (SDG-6.1.1) | AMCOW |
| | Household Sufficiency Indicator | Proportion of households reporting a water supply interruption in the past 12 months (sufficient available – assuming safely managed water supply); | Recommended indicator |
| | Household Availability Indicator 1 | Proportion of households reporting a water supply interruption for more than 2 days in the past 12 months (sufficient and continuous water available – assuming safely managed water supply); | Recommended indicator |
| | Household Availability Indicator 2 | Proportion of households reporting a water supply interruption from more than 15 days in total in the past 12 months (sufficient and continuous water available – assuming safely managed water supply); | Recommended indicator |
| | Household Aesthetic Indicator | Proportion of households reporting drinking water which was clear; good to taste and free from bad smells (i.e. aesthetically acceptable) | Recommended indicator |
| **Safe** | Household Indicator 6.1.1. | SDG Indicator 6.1.1. Proportion of population using safely managed drinking water services | SDGs |
| | | I-3.1b: Percentage of population using safely managed drinking water services (SDG-6.1.1) | AMCOW |
| **Affordability** | Household Expenditure Indicator | Proportion of the household budget spent on water supply services | JMP Recommended Indicator |
| | Household Tariffs Indicator | I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs. | AMCOW |
| | Household Equity Indicator | Implementation of a free basic water supply service policy | South Africa Indicator |

**Universal access:** Table 42 shows that there were numerous and thus adequate indicators to monitor and report household access to a safely managed water supply service. South Africa was already reporting portions of this indicator through the NDP/MTSF; BD indicators. It should be noted that these indicators do need review and updating to ensure compliance with all the aspects required to report SDG Indicator 6.1.1. The Guideline for Monitoring and Reporting SDG 6.1, linked to this report, provides insight into these requirements, as does Section 4.1.1 of this report. The UNICEF and World Health Organization (2017) did however recommend expanding the monitoring and reporting requirements of SDG Target 6.1 to include WASH in institutional setting. Recommendations were that monitoring and reporting of WASH in schools and health care facilities be prioritised, expanding in future to include WASH in other institutional settings (WHO and UNICEF, 2017). Figure 63 showed the indicators recommended by JMP for monitoring and reporting water supply services in schools and health care facilities. Indicators to monitor access to safely managed water supply services in other institutions should be added in future.

**Equitable Access:** The UNICEF and World Health Organization (2017) indicated that the first step in monitoring equitable access to water supply services was to ensure that all people in South Africa have access to, at least, basic water supply services. This would imply that all individual, irrespective of race, gender, age, socio-economic status, settlement type and loci, etc., will have at least a basic water supply service (i.e. *an improved water point provided collection time is no more than 30 minutes for a roundtrip including queuing*). Once this equity imperative has been addressed, South Africa should focus on disaggregating the monitoring and reporting of SDG Indicator 6.1.1. *Proportion of population using safely managed drinking water services,* by gender; household income quantiles; age categories; settlement loci (urban/rural). This would demonstrate the progression of ensuring all individuals in the country had access to a safely managed water supply service (i.e. moving individuals up the water ladder in an equitable manner).

**Access:** as discussed in Section 5.1.3 above, SDG Indicator 6.1.1. *Proportion of population using safely managed drinking water services* already monitors and reports a number of the access criteria required for a water supply service, namely physical and proximity access and availability as a continuous supply. The indicator did not however monitor and report on availability of sufficient water from the supply and the acceptability of the supply. Four indicators were recommended to monitor and report these aspects, namely:

- Proportion of households reporting a water supply interruption in the past 12 months (sufficient available – assuming safely managed water supply);
- Proportion of households reporting a water supply interruption for more than 2 days in the past 12 months (sufficient and continuous water available – assuming safely managed water supply);
- Proportion of households reporting a water supply interruption from more than 15 days in total in the past 12 months (sufficient and continuous water available – assuming safely managed water supply);
- Proportion of households reporting drinking water which was clear; good to taste and free from bad smells (i.e. aesthetically acceptable)

Data to report these indicators were already being collected by the annual General Household Survey conducted by Statistics South Africa.

**Safe drinking water**: Section 5.1.4 above clearly demonstrated that SDG Indicator 6.1.1. *Proportion of population using safely managed drinking water services* already comprehensively monitors and reports drinking water safety through the requirement that a safely managed water supply service be free of faecal (and priority chemical) contamination.

**Affordability:** The current *SDG indicator 6.1.1 proportion of population using safely managed drinking water services* did not monitor the "affordable" access aspect required for SDG Target 6.1. The JMP was exploring indicators for this component of Target 6.1, with early indicators being that *the proportion of the household budget spent on water supply services* would be utilised as a proxy indicator of affordability. AMCOW had included Indicator *I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs*, which would monitor and report.

**Drinking water for all:** this component is largely address through all the above mentioned indicators.

### 7.1.2 A Monitoring Framework for Safely Managed Sanitation Services in South Africa

Section 5.2 demonstrated that a single indicator, ***SDG 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water*** was not sufficient and demonstrated gaps in reporting of *SDG 6.2, by 2030, achieve **access** to **adequate** and **equitable sanitation** and **hygiene** for all and **end open defecation**, paying special attention to the needs of **women and girls** and those in **vulnerable situations***. To successfully monitor and report progress access adequate and equitable sanitation and hygiene for all countries would need to develop indicators to monitor and report at least xx component of the target, namely:

1. **Access** – requires addition indicators for availability at public institutions and acceptability of the sanitation service
2. **Adequate** – SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the essential requirements for a "safely managed" sanitation facility.
3. **Equitable** – requires new indicators for access based on gender (male/female), age (pensions/children), disability, socio-economic status (household income level), settlement area (urban/rural) and affordability indicators
4. **Sanitation** – requires the current SDG indicator 6.2.1. which already comprehensively addresses this component
5. **Hygiene –** see Section 7.1.3
6. **For all** – requires indicators as described for equity above
7. **End open defecation –** requires the disaggregation of data for SDG Indicator 6.2.1 to show individuals with no access to sanitation. The assumption would be that these individual practice open defaecation.
8. **Attention to the needs of women and girls** – requires indicators as described for equity above

9. **Vulnerable** – requires indicators as described for equity above

Combining these indicator needs and the current SDG Indicator 6.2.1 a Monitoring Framework for Safely Managed Sanitation Services in South Africa was developed. The Monitoring Framework for Safely Managed Water Supply Services in South Africa was shown in Figure 63. Figure 63 showed that it was necessary to continue to monitor and report the enabling components which are require to achieve the ***SDG 6.2, by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.*** These enabling component related to ensuring that the management capabilities and systems were developed and in place, the financial and other resource inputs are available to achieve the target and the – currently reported through some of the GLAAS, Blue Drop and No Drop, Benchmarking; NDP and MTSF, and National Treasury input/output indicators for sanitation.

The Monitoring Framework for Safely Managed Sanitation Services in South Africa, shown in Figure 63, was also developed based on current outcome indicators (i.e. such as the SDG indicator) which the country was committed to monitoring and report. Where no indicators were available for the above mentioned components of sanitation, new indicators are recommended. The outcome indicators shown in the Monitoring Framework for Safely Managed Water Supply Services in Figure 63 showed the outcome indicator number which should be reported. This indicator number in Figure 63 was linked to Table 43, which provides details of the actual indicator and its source.

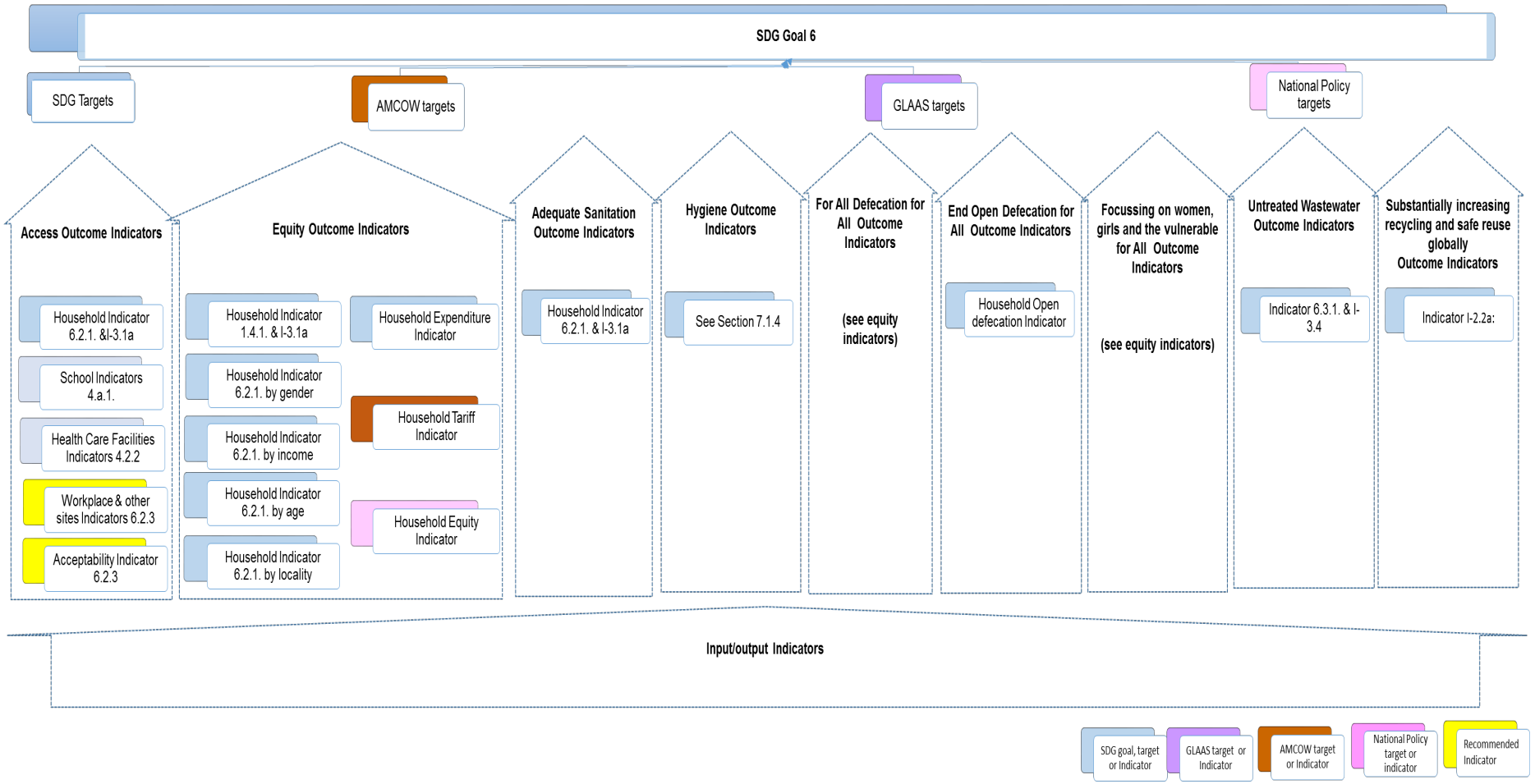


**Figure 63: Monitoring Framework for Safely Managed Sanitation Services for South Africa.**

Note: Figure 63 should be read from the bottom up, with the successful attainment of input/output indicators contributing to achieving the outcome indicators, which in turn will facilitate the achieving the sanitation targets and goals for the country.

Table 43: Indicators recommended in the Monitoring Framework for Safely Managed Sanitation Services for South Africa

| Component | Indicator No. | Indicator | Source |
|---|---|---|---|
| **Access** | Household Indicator 6.2.1. & I-3.1a | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.2a: Percentage of population using safely managed sanitation services (SDG-6.2.1) | AMCOW |
| | School Indicators 4.a.1. | SDG Indicator 4.a.1: Proportion of schools with access to **(f) single-sex basic sanitation facilities** | SDGs |
| | Health care facilities Indicators 6.2.2. | SDG Recommended Indicator: Proportion of health care facilities with access to basic sanitation | SDGs |
| | Workplace Indicators 6.2.3. | Proportion of workplaces with access to basic sanitation | Recommended as future indicator |
| | Acceptability Indicator 6.2.4 | Proportion of households reporting they are happy with their sanitation service | Recommended indicator |
| | Affordability Indicator | See equity indicators | |
| **Equity** | Household Tariffs Indicator I-6.2a | I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs. | AMCOW |
| | Household Equity Indicator | Implementation of a free basic water supply service policy | South Africa Indicator |
| | Household Indicator 1.4.1 & I-3.1a | Indicator 1.4.1: Proportion of population living in households with access to basic services | SDGs |
| | Household Indicator 6.1.1. by gender | I-3.1a: Percentage of population using safely managed sanitation services (SDG-6.2.1) | AMCOW |
| | | Proportion of female/male headed households using safely managed drinking water services | Recommended as future indicator |
| | Household Indicator 6.1.1. by income | Proportion of households per household income quantile using safely managed sanitation services | Recommended as future indicator |
| | Household Indicator 6.1.1. by age | Proportion of population per age category using safely managed using safely managed sanitation services | Recommended as future indicator |
| | Household Indicator 6.1.1. by locality | Proportion of the urban/rural using safely managed using safely managed sanitation services | Recommended as future indicator |
| | Household Expenditure Indicator | Proportion of the household budget spent on using safely managed sanitation services | JMP Recommended Indicator |
| | Household Tariffs Indicator | I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs. | AMCOW |
| | Household Equity Indicator | Implementation of a free basic sanitation policy | South Africa Indicator |
| **Adequate** | Household Indicator .2.1. & I-3.1a | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.2a: Percentage of population using safely managed sanitation services (SDG-6.2.1) | AMCOW |

| Component | Indicator No. | Indicator | Source |
|---|---|---|---|
| **Sanitation** | Household Indicator 6.2.1. & I-3.1a | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.2a: Percentage of population using safely managed sanitation services (SDG-6.2.1) | AMCOW |
| **Hygiene** | See Section 7.1.4 | See Section 7.1.4 | See Section 7.1.4 |
| **End Open Defecation** | Household Open Defecation Indicator | Proportion of population using no sanitation facility (open defecation) | SDGs |
| **Focusing on women, girls and the vulnerable** | See equity indicators | See equity indicators | |
| **Untreated wastewater** | Indicator 6.3.1. & I-3.4 | SDG Indicator 6.3.1. proportion of wastewater safely treated | SDG |
| | | I-3.4: Percentage of wastewater not safely treated | AMCOW |
| **substantially increasing recycling and safe reuse globally** | Indicator I-2.2a | I-2.2a: Percentage of water recycled and reused = volume of water recycled and reused / total freshwater withdrawal | AMCOW |

**Access:** Table 43 showed that there were numerous and thus adequate indicators to monitor and report household access to a safely managed sanitation service. South Africa was already reporting portions of this indicator through the NDP/MTSF; GD indicators. It should be noted that these indicators do need review and updating to ensure compliance with all the aspects required to report SDG Indicator 6.2.1. The Guideline for Monitoring and Reporting SDG 6.2, linked to this report, provides insight into these requirements, as does Section 4.2.1 of this report. Similar to the safely managed water supply requirements above, the UNICEF and World Health Organization (2017) did recommend expanding the monitoring and reporting requirements of SDG Target 6.2 to include WASH in institutional setting. Hence indicators for sanitation at schools and health care facilities were included in the Monitoring Framework for Safely Managed Sanitation Services in South Africa shown in Figure 64.

**Adequate** – was defined as *a system that safely separates excreta from human contact throughout the sanitation chain, either through safe containment and disposal in situ, or through safe transport and treatment/reuse off premises*. SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the essential requirements for a "safely managed" sanitation facility.

**Equitable Access:** The UNICEF and World Health Organization (2017) indicated that the first step in monitoring equitable access to sanitation services was to ensure that all people in South Africa have access to, at least, basic water supply services. This would imply that all individual, irrespective of race, gender, age, socio-economic status, settlement type and loci, etc., will have at least a basic sanitation (i.e. *Use of improved facilities that are not shared with other households*). Once this equity imperative has been addressed, South Africa should focus on disaggregating the monitoring and reporting of SDG Indicator 6.2.1 by gender; household income quantiles; age categories; settlement loci (urban/rural). This would demonstrate the progression of ensuring all individuals in the country had access to a safely managed sanitation service (i.e. moving individuals up the sanitation ladder in an equitable manner). Equity in access in the sanitation context also required affordability of sanitation. SDG 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water, as well as SDG Target 6.2 omit mention of affordability, as appears in the water supply SDG Target 6.1. AMCOW had included Indicator *I-6.2a: Degree of implementation of equitable and efficient water supply and wastewater tariffs*, which would monitor and report. Similarly South Africa had an indicator related to access to Free Basic Sanitation which could be utilised as a proxy affordability indicator.

**Sanitation:** – was defined as the provision of facilities and services for safe management and disposal of human urine and faeces. SDG Indicator 6.2.1 proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water monitored the "safely managed sanitation service" component of the SDG Target 6.2 through the essential requirements for a "safely managed" sanitation facility.

**Hygiene –** see Section 7.1.3

**End open defecation –** Open defecation was the lowest level of the JMP sanitation ladder (WHO and UNICEF, 2017). The current SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water*

does not explicitly report the 'open defecation" which was required to achieve SDG Target 6.2. An indicator on open defecation can however be reported through the disaggregation of data on the type of sanitation facilities available to individuals, as individuals without a sanitation facility would be assumed to practice open defecation. Hence this component of SDG Target 6.2 could be reported when monitoring and reporting SDG Indicator 6.2.1.

**Attention to the needs of women and girls** – requires indicators as described for equity above

**Vulnerable** – requires indicators as described for equity above

The second aspect of safely managed sanitation services was the need to safely treat and dispose, with this being monitored and reported based on *SDG SDG 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials,* ***halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.*** The focus of this target was on largely on what was occurring at the 'end of pipe' of a sanitation service. Hence, progress with the target was monitored and reported by **SDG Indicator 6.3.1 proportion of wastewater safely treated.** Clearly this indicator did not address all the component required to monitor and report the last component of the targets, namely:

- **halving the proportion** – this component was address by indicator 6.3.1 with a contrary relationship with the target i.e. as the indicator showed a higher proportion of wastewater being safely treated, so the portion of untreated wastewater in the SDG Target 6.3 would decrease**.**
- **untreated wastewater –** untreated wastewater is defined as *wastewater has not underground a treatment process to rending it fit to meet applicable environmental standards or other quality norms. Treatment can be categorised into primary, secondary and tertiary treatments (and further by mechanical, biological and advanced technology treatments).* Monitoring and reporting progress with SDG Indicator 6.3.1 *proportion of wastewater safely treated* would directly monitor and report the "untreated" component of SDG 6.3, as increasing the proportion of wastewater which is safely treated in a country would reduce the levels of "untreated" component of SDG 6.3. AMCOW had a similar indicator, although worded conversely to the SDG Indictors, requiring the reporting and monitoring of the percentage of wastewater not safely treated (I-3.)
- **substantially increasing recycling and safe reuse globally –** was defined as (recycling) increasing the on-site reuse of water within the same establishment or industry and (reuse) wastewater supplied to a user for further use, with or without prior treatment (for example us of household wastewater in agriculture), excluding the recycling of water within the same establishment. This component of SDG6.3 was not monitored and reported by **SDG** Indicator 6.3.1. Proportion of wastewater safely treated. AMCOW however did have an indicator, Indicator I-2.2a: Percentage of water recycled and reused = volume of water recycled and reused / total freshwater withdrawal, which could be utilised to report this component.

### 7.1.3 A Monitoring Framework for Basic Hygiene Services in South Africa

Section 5.3 demonstrated that a single indicator, *SDG 6.2.1. proportion of population using safely managed sanitation services, **including a hand-washing facility with soap and water*** was not sufficient and demonstrated gaps in reporting of *SDG 6.2, by 2030, achieve **access** to **adequate** and **equitable** sanitation and **hygiene** for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations*. To successfully monitor and report progress access adequate and equitable hygiene for all countries would need to develop indicators to monitor and report at least xx component of the target, namely:

10. **Access** – requires addition indicators for availability at public institutions and acceptability of the hygiene service
11. **Adequate** – SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the essential requirements for a "a handwashing facility with soap and water".
12. **Equitable** – requires new indicators for access based on gender (male/female), age (pensions/children), disability, socio-economic status (household income level), settlement area (urban/rural) and affordability indicators
13. **Hygiene –** SDG Indicator 6.2.1 *proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water* monitored the "adequate" component of the SDG Target 6.2 through the essential requirements for a "a handwashing facility with soap and water".
14. **For all** – requires indicators as described for equity above

Combining these indicator needs and the current SDG Indicator 6.2.1 a Monitoring Framework for Safely Managed Hygiene Services in South Africa was developed. The Monitoring Framework for Safely Managed Hygiene Services in South Africa was shown in Figure 64. Figure 64 showed that it was necessary to continue to monitor and report the enabling components to achieve the hygiene aspect within Target 6.2. The Monitoring Framework for Safely Managed Hygiene Services in South Africa, shown in Figure 64, was also developed based on current outcome indicators (i.e. such as the SDG indicator) which the country was committed to monitoring and report. Where no indicators were available for the above mentioned components of hygiene, new indicators are recommended. This indicator number in Figure 64 was linked to Table 44, which provides details of the actual indicator and its source.

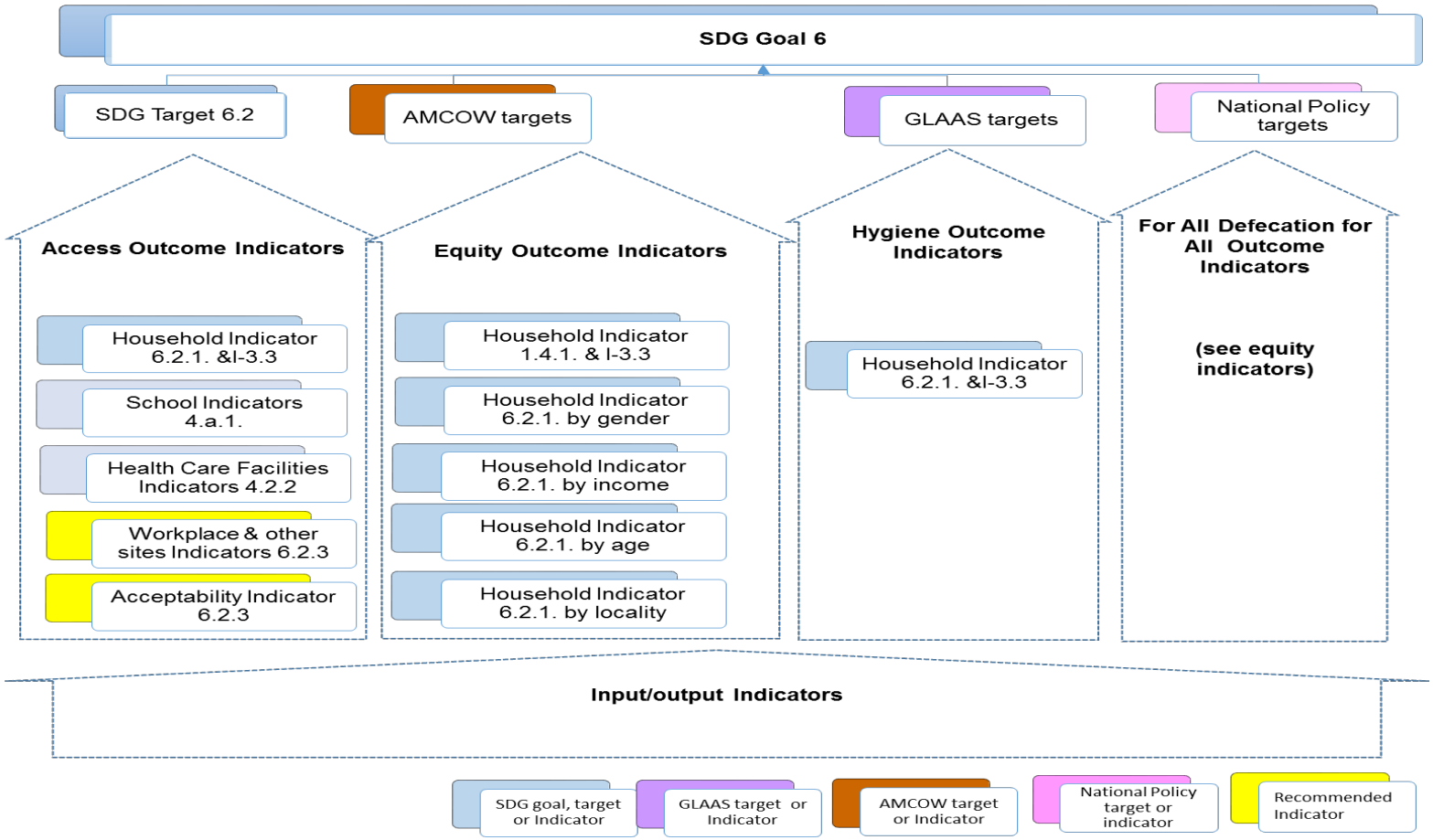


Figure 64: Monitoring Framework for Safely Managed Hygiene Services for South Africa.

Note: Figure 64 should be read from the bottom up, with the successful attainment of input/output indicators contributing to achieving the outcome indicators, which in turn will facilitate the achieving the hygiene targets and goals for the country.

Table 44: Indicators recommended in the Monitoring Framework for Safely Managed Sanitation Services for South Africa

| Component | Indicator No. | Indicator | Source |
|---|---|---|---|
| **Access** | Household Indicator 6.2.1. & I-3.3: | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.3: Percentage of population with handwashing facilities with soap and water at home | AMCOW |
| | School Indicators 4.a.1. | SDG Indicator 4.a.1: Proportion of schools with access to **(g) basic handwashing facilities** | SDGs |
| | Health care facilities Indicators 6.2.2. | SDG Recommended Indicator: Proportion of health care facilities with access to basic hygiene | SDGs |
| | Workplace Indicators 6.2.3. | Proportion of workplaces with access to basic sanitation | Recommended as future indicator |
| | Acceptability Indicator 6.2.4 | Proportion of households reporting they are happy with their hygiene service | Recommended indicator |
| | Affordability Indicator | See equity indicators | |
| **Equity** | Household Indicator 6.2.1. & I-3.3: | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.3: Percentage of population with handwashing facilities with soap and water at home | AMCOW |
| | Household Indicator 6.2.1. by gender | Proportion of female/male headed households using basic hygiene | Recommended as future indicator |
| | Household Indicator 6.2.1. by income | Proportion of households per household income quantile using basic hygiene service | Recommended as future indicator |
| | Household Indicator 6.2.1. by age | Proportion of population per age category using safely managed using basic hygiene | Recommended as future indicator |
| | Household Indicator 6.2.1. by locality | Proportion of the urban/rural using safely managed using basic hygiene | Recommended as future indicator |
| **Adequate** | Household Indicator 6.2.1. & I-3.3: | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | SDGs |
| | | I-3.3: Percentage of population with handwashing facilities with soap and water at home | AMCOW |
| **Hygiene** | Household Indicator 6.2.1. & I-3.3: | SDG Indicator 6.2.1. proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water | Household Indicator 6.2.1. & I-3.3: |
| | | I-3.3: Percentage of population with handwashing facilities with soap and water at home | |

# 8 CONCLUSIONS

South Africa was moving into a new era of monitoring and reporting water supply, sanitation and hygiene services. The Sustainable Development Goals have guided the country into this new era, providing targets and indicators for the sustainable provision of safely managed water supply, sanitation and hygiene services. In achieving or making progress towards the SDG targets, South Africa should be moving closer to providing universal access to sustainable services. International monitoring and reporting initiatives also provided the country with key indicators for monitoring and reporting on the enabling environment required for achieving the SDG targets.

South Africa already had a wide-range of WASH indicators which were being reported. These indicators had been developed and reported during the MDG era (1994-2015), maturing into a suite of water supply and sanitation indicators which could report the country's progress towards achieving the MDGs. It was clear at the end of the MDG monitoring era, during which South Africa achieved the water supply MDG but missed the sanitation MDG target, that the country had agreed on a suite of WASH indicators and a standardised means of collecting data for these indicators. These indicators and their supporting data collection approaches were not sufficient for the SDG era (2016-2030). The country will need to review current WASH monitoring and reporting data collection methods, tools and reporting systems to ensure that these address the SDG era requirements.

It was possible to develop a hierarchical framework for monitoring WASH in the country, focussing on ensuring that the framework included indicators for all the component required to meet the SDG 6 water supply, sanitation and hygiene targets. South Africa had the advantage of the MDG 6 monitorng efforts as a base for SDG 6 monitoring efforts, but still had a significant amount of effort and resource required to be able to report comprehensively to the SDGs and other national and international monitoring initiatives.

# 9 RECOMMENDATIONS

## 9.1 POLICY RECOMMENDATIONS

South Africa has a number of WASH monitoring and reporting policy gaps and challenges which need to be addressed to ensure sustainable WASH monitoring and reporting in the country. These include:

- **Developing, engaging and reaching consensus on domesticated WASH targets:** Policy is needed to set country-specific, evidence-based targets for the WASH sector. The current NDP/MTSF and other national targets require review and alignment to the SDG 6 targets. These targets must be linked to SMART, outcome indicators.
- **Developing, engaging and reaching consensus on domesticated WASH indicators:** Selecting and reaching consensus on country-specific WASH indicators at a local (i.e. local government), provincial and national level is required. The current NDP/MTSF and other national indicators require review and alignment to the SDG 6 indicators. Domesticated WASH indicator must focus on monitoring and reporting WASH policy outcomes in the country but should also make use of current monitoring and reporting input/output indicators to inform the outcome indicators.
- **Developing, engaging and reaching consensus on a policy to progressively improve WASH monitoring and reporting:** A policy plan is required to progressively improve the suite of indicators which the country will monitor and report until 2030.
- **Setting minimum levels of safely managed water supply and sanitation:** South Africa needs to reach policy consensus on the minimum levels of safely managed water supply and sanitation to be reported for SDG 6. The current water supply and sanitation ladder provide guidance on the component required for each level in the ladder but do not dictate the level of technology which is deemed to be “safely managed”. South Africa will need to, within the policy environment, determine which technologies provided would be deemed to comply with which levels of the water supply and sanitation ladder and then to structure the country SDG monitoring and reporting within this framework.
- **Developing, engaging and reaching consensus on a WASH equity strategy:** A strategy for ensuring equity in the WASH sector of the country is required. This strategy should outline the landscape in which equity would be achieved (i.e. what the WASH sector would look like if equity was achieved) and link this to equity targets and SMART outcome and impact equity indicators.
- **Developing, engaging and reaching consensus on mainstreaming of gender dimensions in water and sanitation**: A strategy for gender mainstreaming in the WASH sector of the country is required. This strategy must be linked to gender mainstreaming targets and SMART outcome and impact gender indicators.
- **Integrating and aligning WASH policy and legislation:** current policy and legislation require review to ensure alignment with SDG and NDP WASH agendas. WASH monitoring and reporting requirements need to be reviewed and revised in these documents to ensure alignment with the international and national sustainable development efforts. WASH policy and legislation does not only relate to the water supply and sanitation policy and legislation but other sector policies which impact on WASH such

as health, education and poverty, as well as statistical policy and legislation. Alignment of the NDP with SDGs may also be required, i.e. focus on gender; equity in the WASH.

- **Ensuring water security is a focus of WASH policy and monitoring and reporting these efforts:** water security, as demonstrated by the drought stricken areas of South Africa in recent year, is increasingly becoming a challenge and concern in the country. There is a need to review current policies and ensure that water security becomes a fundamental principle of these. Means of monitoring and reporting water security within the SDGs domesticated indicators and outcome indicators of policy need to be determined and implemented.

## 9.2 INSTITUTIONAL RECOMMENDATIONS

South Africa has a number of WASH monitoring and reporting institutional gaps and challenges which need to be addressed to ensure sustainable WASH monitoring and reporting in the country. These include:

- **Ensuring alignment of the local institution with the international WASH institution:** There is a need to ensure alignment of the South Africa WASH monitoring and reporting institution with the international institution. The current international monitoring institution is complex, with Target 6.1 and 6.2 being monitored and reported by the JMP, global Targets 6.3-6.6 being the responsibility of GEMI and global Targets 6a and 6b the responsibility of GLAAS. The local institutions need to streamline and coordinate to ensure alignment with this international institution. Note should be taken that Goal 1 and Goal 4 are the responsibilities of other international institutions and South Africa needs to ensure alignment with these institutional to be able to monitoring and report WASH indicators under these SDG goals. StatsSA was the national coordinator of the SDG reporting process, culminating in the production of the country report on progress toward achieving the goals.
- **Ensuring alignment and coordination of the local WASH institution**: There is a growing realization that the state needs to reinvent itself, adopt new approaches that break down silos and welcome innovation and inclusivity in monitoring and reporting the SDGs and progress with the NDP. Clarity and transparency is required on the roles and responsibility of monitoring and reporting the SDG 6 targets and indicators in the country, as well as monitoring and reporting of any other WASH indicators in the SDGs (i.e. SDG 1 and SDG 4). Communication of these roles and responsibilities to the public and the sector as a whole is necessary – the SDG are based on the principles of inclusivity and participation. Similarly, clarity of institutional reporting responsibility related to SDG targets which requires inputs from more than one institution is required. For example, SDG target 6.3 has an ambient water quality indicator; a wastewater indicator and will in future require monitoring and reporting of safe reuse and recycling. Each of these indicator may be the responsibility of a different unit within a department or may be the responsibility of more than one department. Clarity on this is required.
- **Stakeholder engagement and participation in the SDG process:** In order to successfully monitor and report the SDG in South Africa, there is a recognized need to adhere to a “bottom-up” approach. The processes of both the NDP and SDGs emphasize inclusivity and ensuring that no-one is left behind. In order to successfully implement of the WASH SDGs, an attitude of ownership and participation needs to be developed within

the public sector. When the process is built around people, and made accessible, public, and transparent, the SDG targets and indicator will be transparent and clear to the public and the government sector would be held to account with progress.

## 9.3 PROGRAMME RECOMMENDATIONS

In implementing the WASH monitoring and reporting systems in South Africa, the following considerations would be necessary:

- **Ensuring the enabling environment is in place for the monitoring and reporting of domesticated indicators of WASH and the SDGs:** There is a need to factor in technology, finance and capacity/skills as means of implementation of WASH monitoring and reporting programmes in the country;
- **Application of frameworks for monitoring and reporting the broader components of water and sanitation hygiene**: there is a need to implement a framework or programme for the monitoring and reporting of hygiene, all aspects of this, in the WASH sector of South Africa. Hygiene awareness, education and promotion has been shown to be the most cost effective means of having positive impacts on health and yet, it remains the most under recognised and applied intervention in South Africa. Similarly, few lessons learnt case studies are available for hygiene intervention which have taken place in the country and no national monitoring and reporting of hygiene is correctly available. StatsSA and DWS need to urgently develop a framework for monitoring and reporting hygiene intervention and outcome indicators in the country, as well as a suite of potential hygiene behaviour indicators (perhaps as part of the GHS conducted annually).
- **Capturing case studies and best practice in implementation of WASH monitoring and reporting:** There is a need to capture comparable studies through generating case studies and best practices in WASH monitoring and reporting to allow for replication and to inform future interventions

## 9.4 RESEARCH RECOMMENDATIONS

South Africa has a number of research gaps related to WASH monitoring and reporting in the country, including:

- **Research to inform the participatory development and agreed domesticated WASH targets and indicators:** There was a need to conduct additional research on domesticated WASH targets and indicators, particularly to inform the development of stakeholder agreed equity, gender and hygiene targets and indicators. This monitoring and evaluation research needs to be informed by and needs to inform current WASH sector policies, i.e. NDP; Statistical; Water services, etc.
- **Research of standardised method to monitor and report domesticated WASH indicators and international SDGs:** There is a need to develop standardised methods and approaches to monitor and report such components as wastewater treatment; equity; affordability and acceptability. There is also an urgent need to conduct research on the

most effective and efficient means of monitoring and reporting hygiene, particularly handwashing, indicators in the country.

- **Research of data needs, systems and processes to monitor and report WASH SDGs:** One of the most pressing challenges for monitoring and reporting the SDGs and sustainable development was the lack of a cohesive national and global partnership for data gathering and sharing. Research is required on data access to be able to monitor and report WASH indicators for the country. This would include research to address:
    - How to access to data without spending too much money, especially StatsSA?
    - Intelligent systems to capture and access all the data.
    - The need for a data registry and management across the various systems (of government) linked to water.
    - How to address data gaps in current monitoring systems

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# 11 APPENDIX 1: MDGS

Table 45: Revised MDGs monitoring framework including new targets and indicators (WHO, 2008)

| Revised Goals and Targets (from the Millennium Declaration) | Indicators for monitoring progress |
|---|---|
| **Goal 1: Eradicate Extreme Hunger and Poverty** | |
| **Target 1.A**: Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day | 1.1 Proportion of population below $1 (1993 PPP) per day (World Bank)<br>1.2 Poverty gap ratio [incidence x depth of poverty] (World Bank)<br>1.3 Share of poorest quintile in national consumption (World Bank) |
| **Target 1.B**: Achieve full and productive employment and decent work for all, including women and young people | 1.4 Growth rate of GDP per person employed<br>1.5 Employment-to-population ratio<br>1.6 Proportion of employed people living below $1.25 (PPP) per day<br>1.7 Proportion of own-account and contributing family workers in total employment |
| **Target 1.C**: Halve, between 1990 and 2015, the proportion of people who suffer from hunger | 1.8 Prevalence of underweight children under five years of age (UNICEF-WHO)<br>1.9 Proportion of population below minimum level of dietary energy consumption (FAO) |
| **Goal 2: Achieve Universal Primary Education** | |
| **Target 2.A**: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling | 2.1 Net enrolment ratio in primary education<br>2.2 Proportion of pupils starting grade 1 who reach last grade of primary<br>2.3 Literacy rate of 15-24 year-olds, women and men |
| **Goal 3: Promote Gender Equality and Empower Women** | |
| **Target 3.A**: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015 | 3.1 Ratios of girls to boys in primary, secondary and tertiary education<br>3.2 Share of women in wage employment in the non-agricultural sector<br>3.3 Proportion of seats held by women in national parliament |
| **Goal 4: Reduce Child Mortality** | |
| **Target 4.A**: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate | 4.1 Under-five mortality rate (UNICEF-WHO)<br>4.2 Infant mortality rate (UNICEF-WHO)<br>4.3 Proportion of 1 year-old children immunized against measles (UNICEF-WHO) |
| **Goal 5: Improve Maternal Health** | |
| **Target 5.A**: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio | 5.1 Maternal mortality ratio (UNICEF-WHO)<br>5.2 Proportion of births attended by skilled health personnel (UNICEF-WHO) |
| **Target 5.B**: Achieve, by 2015, universal access to reproductive health | 5.3 Contraceptive prevalence rate<br>5.4 Adolescent birth rate |

| Revised Goals and Targets (from the Millennium Declaration) | Indicators for monitoring progress |
|---|---|
| | 5.5 Antenatal care coverage (at least one visit and at least four visits)<br>5.6 Unmet need for family planning |
| **Goal 6: Combat HIV/AIDS, Malaria and other diseases** | |
| **Target 6.A**: Have halted by 2015 and begun to reverse the spread of HIV/AIDS | 6.1 HIV prevalence among population aged 15-24 years<br>6.2 Condom use at last high-risk sex<br>6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS<br>6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years |
| **Target 6.B**: Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it | 6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs |
| **Target 6.C**: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases | 6.6 Incidence and death rates associated with malaria<br>6.7 Proportion of children under 5 sleeping under insecticide-treated bednets<br>6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs<br>6.9 Incidence, prevalence and death rates associated with tuberculosis<br>6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course |
| **Goal 7: Ensure Environmental Sustainability** | |
| **Target 7.A**: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources | 7.1 Proportion of land area covered by forest<br>7.2 CO2 emissions, total, per capita and per $1 GDP (PPP)<br>7.3 Consumption of ozone-depleting substances<br>7.4 Proportion of fish stocks within safe biological limits |
| **Target 7.B**: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss | 7.5 Proportion of total water resources used<br>7.6 Proportion of terrestrial and marine areas protected<br>7.7 Proportion of species threatened with extinction |
| **Target 7.C**: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation | 7.8 Proportion of population using an improved drinking water source<br>7.9 Proportion of population using an improved sanitation facility |
| **Target 7.D**: Have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers | 7.10 Proportion of urban population living in slums |
| **Goal 8: Develop a Global Partnership for Development** | |
| **Target 8.A**: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system<br>Includes a commitment to good governance, development and poverty reduction – both nationally and internationally<br>**Target 8.B**: Address the special needs of the least developed countries | Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked developing countries and small island developing States.<br><u>Official development assistance (ODA)</u><br>8.1 Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income<br>8.2 Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic |

| Revised Goals and Targets (from the Millennium Declaration) | Indicators for monitoring progress |
|---|---|
| Includes: tariff and quota free access for the least developed countries' exports; enhanced programme of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction<br><br>**Target 8.C**: Address the special needs of landlocked developing countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)<br><br>**Target 8.D**: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term | education, primary health care, nutrition, safe water and sanitation)<br><br>8.3 Proportion of bilateral official development assistance of OECD/DAC donors that is untied<br><br>8.4 ODA received in landlocked developing countries as a proportion of their gross national incomes<br><br>8.5 ODA received in small island developing States as a proportion of their gross national incomes<br><br><u>Market access</u><br><br>8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty<br><br>8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries<br><br>8.8 Agricultural support estimate for OECD countries as a percentage of their gross domestic product<br><br>8.9 Proportion of ODA provided to help build trade capacity<br><br><u>Debt sustainability</u><br><br>8.10 Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative)<br><br>8.11 Debt relief committed under HIPC and MDRI Initiatives<br><br>8.12 Debt service as a percentage of exports of goods and services |
| **Target 8.E**: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries | 8.13 Proportion of population with access to affordable essential drugs on a sustainable basis |
| **Target 8.F**: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications | 8.14 Fixed-telephone subscriptions per 100 inhabitants<br><br>8.15 Mobile-cellular subscriptions per 100 inhabitants<br><br>8.16 Internet users per 100 inhabitants |

# 12 APPENDIX 2: JMP DATA FOR WATER SUPPLY AND SANITATION FROM VARIOUS SOURCES

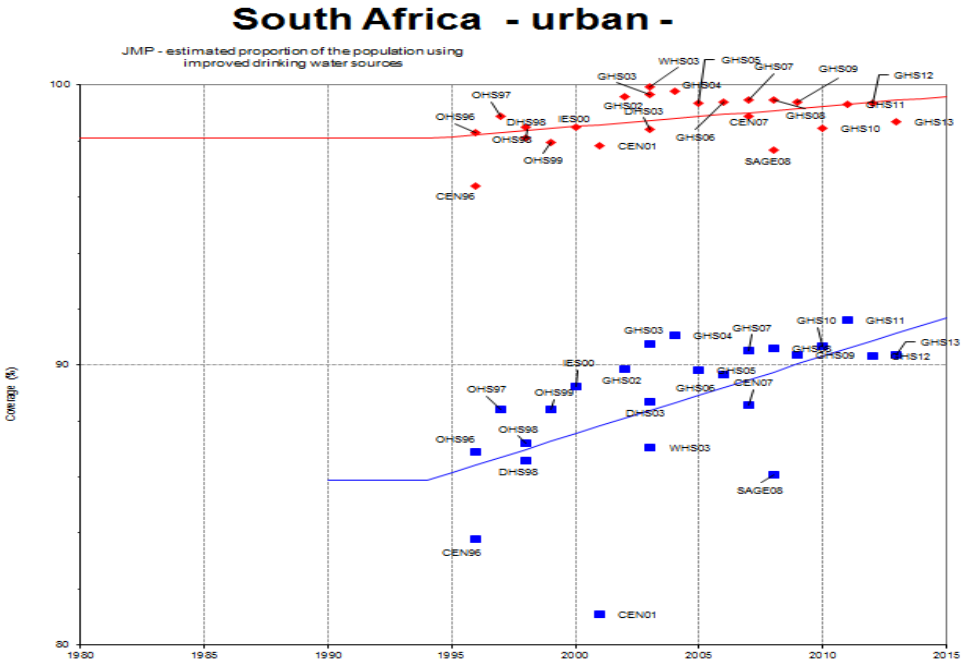
Table 46: Data sources utilized by the Joint Monitoring Programme to track South Africa's progress with the water supply MDG

| South Africa | | | DRINKING WATER | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | URBAN | | | | | | RURAL | | | | | | TOTAL | | | | | |
| | | | Piped onto premises | | Total improved | | Surface water | | Piped onto premises | | Total improved | | Surface water | | Piped onto premises | | Total improved | | Surface water | |
| Source | Code | Year | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used |
| October Household Surveys | OHS94 | 1994 | | 92,3 | | 99,3 | | 0,1 | | 32,5 | | 72,2 | | 19,2 | | 64,8 | | 86,8 | | 8,9 |
| October Household Surveys | OHS95 | 1995 | | 93,9 | | 99,0 | | 0,2 | | 37,6 | | 73,6 | | 18,7 | | 68,3 | | 87,4 | | 8,6 |
| October Household Surveys | OHS96 | 1996 | 86,9 | | 98,3 | | 0,2 | | 25,4 | | 71,3 | | 21,7 | | 59,2 | | 86,1 | | 9,9 | |
| Recensement général de la population | CEN96 | 1996 | 83,8 | | 96,4 | | 0,2 | | 21,9 | | 65,7 | | 33,9 | | 55,9 | | 82,6 | | 15,4 | |
| October Household Surveys | OHS97 | 1997 | 88,4 | | 98,9 | | 0,0 | | 26,7 | | 70,0 | | 21,8 | | 60,9 | | 86,0 | | 9,7 | |
| October Household Surveys | OHS98 | 1998 | 87,2 | | 98,5 | | 0,0 | | 29,3 | | 71,0 | | 17,0 | | 61,7 | | 86,4 | | 7,5 | |
| Demographic and Health Survey | DHS98 | 1998 | 86,6 | | 98,1 | | 0,2 | | 26,5 | | 66,4 | | 28,5 | | 60,1 | | 84,1 | | 12,7 | |
| October Household Surveys | OHS99 | 1999 | 88,4 | | 98,0 | | 0,1 | | 31,1 | | 73,6 | | 15,9 | | 63,4 | | 87,3 | | 7,0 | |
| Income and Expenditure Survey | IES00 | 2000 | 89,2 | | 98,5 | | 0,2 | | 27,8 | | 67,5 | | 19,5 | | 62,7 | | 85,1 | | 8,5 | |
| Census | CEN01 | 2001 | 81,1 | | 97,9 | | 0,3 | | 28,6 | | 71,8 | | 19,6 | | 58,7 | | 86,8 | | 8,5 | |
| General Household Survey | GHS02 | 2002 | 89,9 | | 99,6 | | 0,1 | | 29,4 | | 68,3 | | 20,3 | | 64,4 | | 86,4 | | 8,6 | |
| World Health Survey | WHS03 | 2003 | 87,1 | | 100,0 | | 0,0 | | | 47,5 | | 86,7 | | 5,8 | | | | | | |
| Demographic and Health Survey | DHS03 | 2003 | 88,7 | | 98,4 | | 0,2 | | 27,6 | | 69,2 | | 20,4 | | 63,3 | | 86,3 | | 8,6 | |
| General Household Survey | GHS03 | 2003 | 90,8 | | 99,7 | | 0,0 | | 29,8 | | 70,3 | | 17,0 | | 65,4 | | 87,5 | | 7,1 | |
| General Household Survey | GHS04 | 2004 | 91,1 | | 99,8 | | 0,1 | | 30,4 | | 72,7 | | 16,3 | | 66,2 | | 88,7 | | 6,7 | |
| General Household Survey | GHS05 | 2005 | 89,8 | | 99,3 | | 0,1 | | 26,5 | | 73,1 | | 14,6 | | 64,2 | | 88,7 | | 5,9 | |
| General Household Survey | GHS06 | 2006 | 89,7 | | 99,4 | | 0,1 | | 30,3 | | 77,2 | | 13,8 | | 66,0 | | 90,5 | | 5,5 | |
| Recensement général de la population | CEN07 | 2007 | 88,6 | | 98,9 | | 0,2 | | 31,5 | | 73,6 | | 20,5 | | 66,1 | | 89,0 | | 8,2 | |
| General Household Survey | GHS07 | 2007 | 90,5 | | 99,5 | | 0,1 | | 31,1 | | 77,5 | | 14,3 | | 67,1 | | 90,8 | | 5,7 | |
| Study on Global Ageing and Adult health | SAGE08 | 2008 | 86,1 | | 97,7 | | 0,0 | | 43,5 | | 84,1 | | 5,0 | | 69,5 | | 92,4 | | 2,0 | |
| National Income Dynamics Study: Wave 1 (Panel) | NIDS08 | 2008 | | 94,8 | | 99,3 | | 0,0 | | 58,2 | | 89,6 | | 4,0 | | 80,6 | | 95,5 | | 1,6 |
| General Household Survey | GHS08 | 2008 | 90,6 | | 99,5 | | 0,1 | | 32,6 | | 78,2 | | 13,4 | | 68,0 | | 91,2 | | 5,2 | |
| General Household Survey | GHS09 | 2009 | 90,4 | | 99,4 | | 0,1 | | 31,7 | | 77,4 | | 14,3 | | 67,9 | | 91,0 | | 5,6 | |
| General Household Survey | GHS10 | 2010 | 90,7 | | 98,5 | | 0,4 | | 34,1 | | 76,8 | | 12,6 | | 69,3 | | 90,3 | | 5,0 | |
| National Income and Dynamics Study: Wave 2 (Panel) | NIDS10 | 2010 | | 95,2 | | 99,6 | | 0,1 | | 71,8 | | 93,1 | | 3,3 | | 86,4 | | 97,1 | | 1,3 |
| Income and Expenditure of Households | IES11 | 2011 | | 93,5 | | 98,3 | | 0,2 | | 64,9 | | 87,8 | | 5,0 | | 82,9 | | 94,4 | | 2,0 |
| General Household Survey | GHS11 | 2011 | 91,6 | | 99,3 | | 0,2 | | 35,7 | | 77,9 | | 11,0 | | 70,8 | | 91,3 | | 4,2 | |
| General Household Survey | GHS12 | 2012 | 90,3 | | 99,4 | | 0,0 | | 34,6 | | 78,6 | | 10,3 | | 69,8 | | 91,7 | | 3,8 | |
| General Household Survey | GHS13 | 2013 | 90,4 | | 98,7 | | 0,0 | | 36,9 | | 78,3 | | 11,3 | | 71,0 | | 91,3 | | 4,1 | |

## Table 47: Data sources utilized by the Joint Monitoring Programme to track South Africa's progress with the sanitation MDG

| South Africa | | | SANITATION | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | URBAN | | | | | | | | RURAL | | | | | | | | TOTAL | | | | | |
| | | | Sewer connection | | Total improved (incl shared) | | Shared | | Open defecation | | Sewer connection | | Total improved (incl shared) | | Shared | | Open defecation | | Sewer connection | | Total improved (incl shared) | | Shared | | Open defecation | |
| Source | Code | Year | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used | Used in ests. | Not used |
| October Household Surveys | OHS94 | 1994 | 84,1 | | 90,5 | | | | 1,0 | | 11,5 | | 55,5 | | | | 19,2 | | 50,7 | | 74,4 | | | | 9,4 | |
| October Household Surveys | OHS95 | 1995 | 85,8 | | 90,4 | | | | 0,6 | | 15,9 | | 58,2 | | | | 18,5 | | 54,0 | | 75,8 | | | | 8,7 | |
| October Household Surveys | OHS96 | 1996 | 81,3 | | 88,5 | | | | 2,0 | | 10,3 | | 51,8 | | | | 24,5 | | 49,4 | | 72,0 | | | | 12,1 | |
| Recensement général de la population | CEN96 | 1996 | | | 85,5 | | | | 2,9 | | | | 49,0 | | | | 25,6 | | | | 69,1 | | | | 13,1 | |
| October Household Surveys | OHS97 | 1997 | 83,9 | | 90,0 | | | | 1,6 | | 25,0 | | 60,1 | | | | 19,4 | | 57,7 | | 76,7 | | | | 9,5 | |
| October Household Surveys | OHS98 | 1998 | 81,2 | | 88,2 | | | | 2,1 | | 11,2 | | 51,4 | | | | 27,8 | | 50,4 | | 72,0 | | | | 13,4 | |
| Demographic and Health Survey | DHS98 | 1998 | 79,0 | | 93,5 | | | | 2,0 | | 7,5 | | 50,7 | | | | 25,6 | | 47,5 | | 74,6 | | | | 12,4 | |
| October Household Surveys | OHS99 | 1999 | 81,1 | | 89,4 | | | | 1,9 | | 14,3 | | 56,5 | | | | 20,8 | | 52,0 | | 75,1 | | | | 10,1 | |
| Income and Expenditure Survey | IES00 | 2000 | | | 90,4 | | 23,5 | | 1,7 | | | | 52,9 | | 20,2 | | 25,2 | | | | 74,3 | | 22,1 | | 11,8 | |
| Census | CEN01 | 2001 | 74,4 | | 86,0 | | | | 5,1 | | 7,1 | | 54,3 | | | | 27,7 | | 45,7 | | 72,5 | | | | 14,7 | |
| General Household Survey | GHS02 | 2002 | | | | | | | | | | | | | | | | | | | | | | | | |
| World Health Survey | WHS03 | 2003 | 92,9 | | 98,1 | | | 28,1 | 0,3 | | 30,6 | | 74,1 | | | 28,2 | 13,0 | | 67 | | 88,1 | | | 28,1 | 5,6 | |
| Demographic and Health Survey | DHS03 | 2003 | 74,8 | | 91,2 | | | | 2,3 | | 5,5 | | 55,6 | | | | 18,5 | | 46 | | 76,4 | | | | 9,0 | |
| General Household Survey | GHS03 | 2003 | | | | | | | | | | | | | | | | | | | | | | | | |
| General Household Survey | GHS04 | 2004 | | | | | | | | | | | | | | | | | | | | | | | | |
| General Household Survey | GHS05 | 2005 | | | 91,5 | | 29,2 | | 2,1 | | | | 61,5 | | 23,9 | | 18,8 | | | | 79,4 | | 27,1 | | 8,9 | |
| General Household Survey | GHS06 | 2006 | | | 92,0 | | 30,4 | | 2,0 | | | | 63,8 | | 25,4 | | 15,0 | | | | 80,8 | | 28,4 | | 7,2 | |
| Recensement général de la population | CEN07 | 2007 | 78,1 | | 91,4 | | | | 2,7 | | 7,5 | | 53,7 | | | | 21,7 | | 50,3 | | 76,6 | | | | 10,2 | |
| General Household Survey | GHS07 | 2007 | | | 92,2 | | 33,0 | | 1,7 | | | | 63,4 | | 25,9 | | 16,5 | | | | 80,9 | | 30,2 | | 7,5 | |
| Study on Global Ageing and Adult health | SAGE08 | 2008 | 76,9 | | 91,4 | | | | 1,7 | | 12,9 | | 62,6 | | | | 10,7 | | 52 | | 80,2 | | | | 5,2 | |
| National Income Dynamics Study: Wave 1 (Panel) | NIDS08 | 2008 | | | 95,6 | | | | 1,3 | | | | 66,4 | | | | 13,7 | | | | 84,2 | | | | 6,1 | |
| General Household Survey | GHS08 | 2008 | | | 93,3 | | 27,0 | | 1,6 | | | | 65,4 | | 20,9 | | 15,0 | | | | 82,5 | | 24,6 | | 6,8 | |
| General Household Survey | GHS09 | 2009 | | | 94,0 | | 26,6 | | 1,8 | | | | 70,3 | | 18,3 | | 12,5 | | | | 84,9 | | 23,4 | | 5,9 | |
| General Household Survey | GHS10 | 2010 | | | 92,9 | | 25,4 | | 1,4 | | | | 68,1 | | 15,2 | | 12,0 | | | | 83,5 | | 21,6 | | 5,4 | |
| National Income and Dynamics Study: Wave 2 (Panel) | NIDS10 | 2010 | 21,9 | | 96,1 | | 30,1 | | 0,5 | | 16,4 | | 82,6 | | 32,4 | | 5,4 | | 19,8 | | 91 | | 31 | | 2,3 | |
| Income and Expenditure of Households | IES11 | 2011 | 88,6 | | 96,2 | | | | 1,1 | | 44,2 | | 76,6 | | | | 9,1 | | 72 | | 88,9 | | | | 4,1 | |
| General Household Survey | GHS11 | 2011 | | | 94,1 | | 24,8 | | 1,4 | | | | 71,5 | | 14,8 | | 11,5 | | | | 85,7 | | 21,1 | | 5,2 | |
| General Household Survey | GHS12 | 2012 | | | 92,8 | | 23,3 | | 1,8 | | | | 74,4 | | 15,8 | | 9,7 | | | | 86 | | 20,6 | | 4,7 | |
| General Household Survey | GHS13 | 2013 | | | 94,4 | | 25,6 | | 1,4 | | | | 76,0 | | 15,0 | | 9,4 | | | | 87,7 | | 21,8 | | 4,3 | |

Figure 65 shows the data on access to an improved water supply (red data) and improved water supply on the premises (blue data) from various data sources provided various results. Figure 3 demonstrates that in the urban areas, the 1996 and 2001 Census and the Study on Global Ageing and Adult Health data related to access to an improved water supply and access to a water supply on the premises is lower than similar data collect for the other surveys. The rural data sets in Figure 65 seem to demonstrate much more consistency in the data related to access to an improved water supply and access to a water supply on the premises.



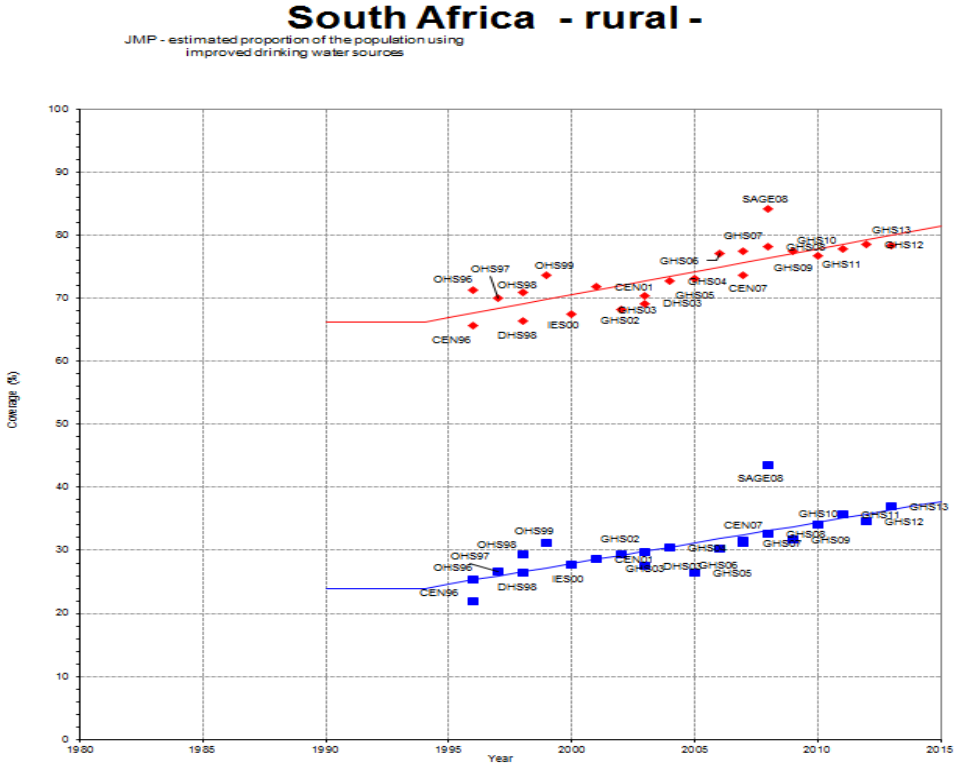
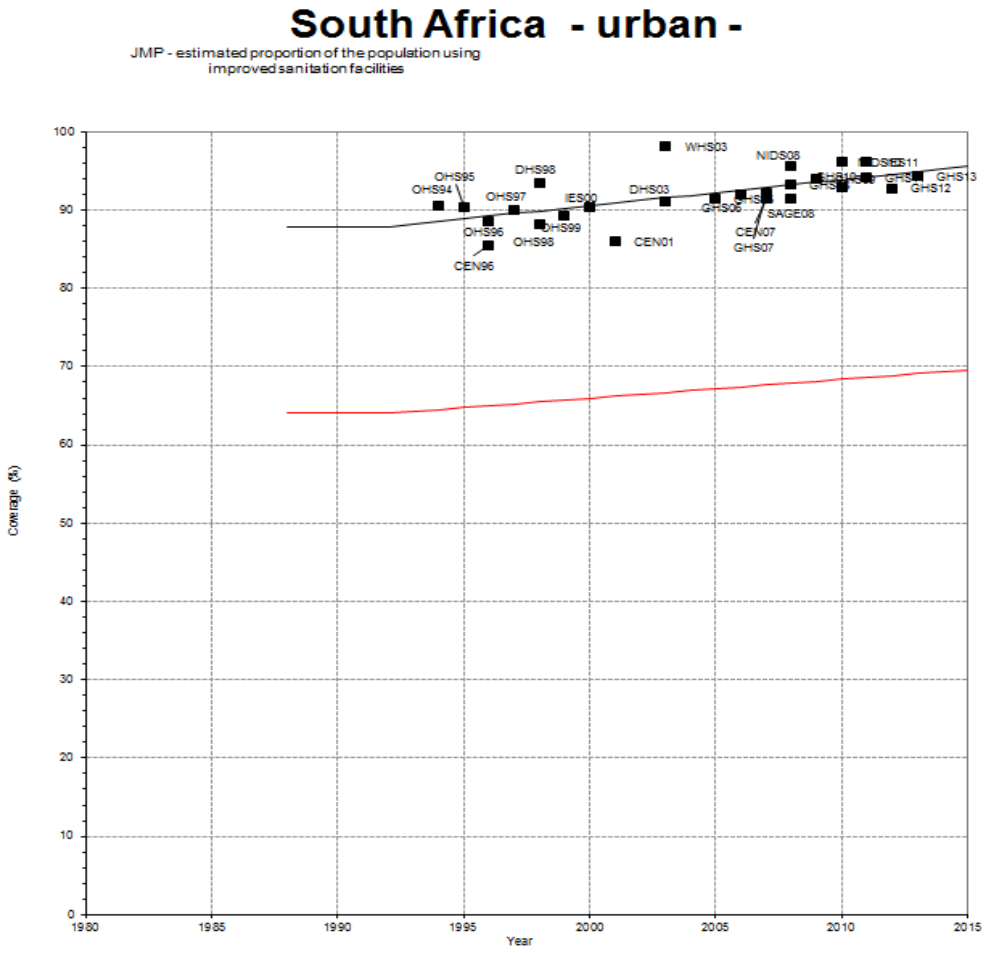



Figure 65: JMP data source utilized to report on progress with the water supply MDGs. Red line shows data for total percent of households with improve water supply and blue data shows data for percent of households with improved source on the premises. Data source include: OHS-October Households Survey; Cen=Census; GHS=General Household Survey; DHS=Demographic and Household Survey; WH=World Health Survey and SAGE=Study on Global Ageing and Adult Health (taken from UNICEF and World Health Organization, 2015).

Figure 66 shows the JMP data sets utilised to report urban and rural access to improved sanitation, demonstrating that the various data sources provide various outputs for the same year. However, the sanitation data sets do seem to show greater similarities in access to improved sanitation in a particular year, when compared to the water supply data point shown in Figure 65 above.



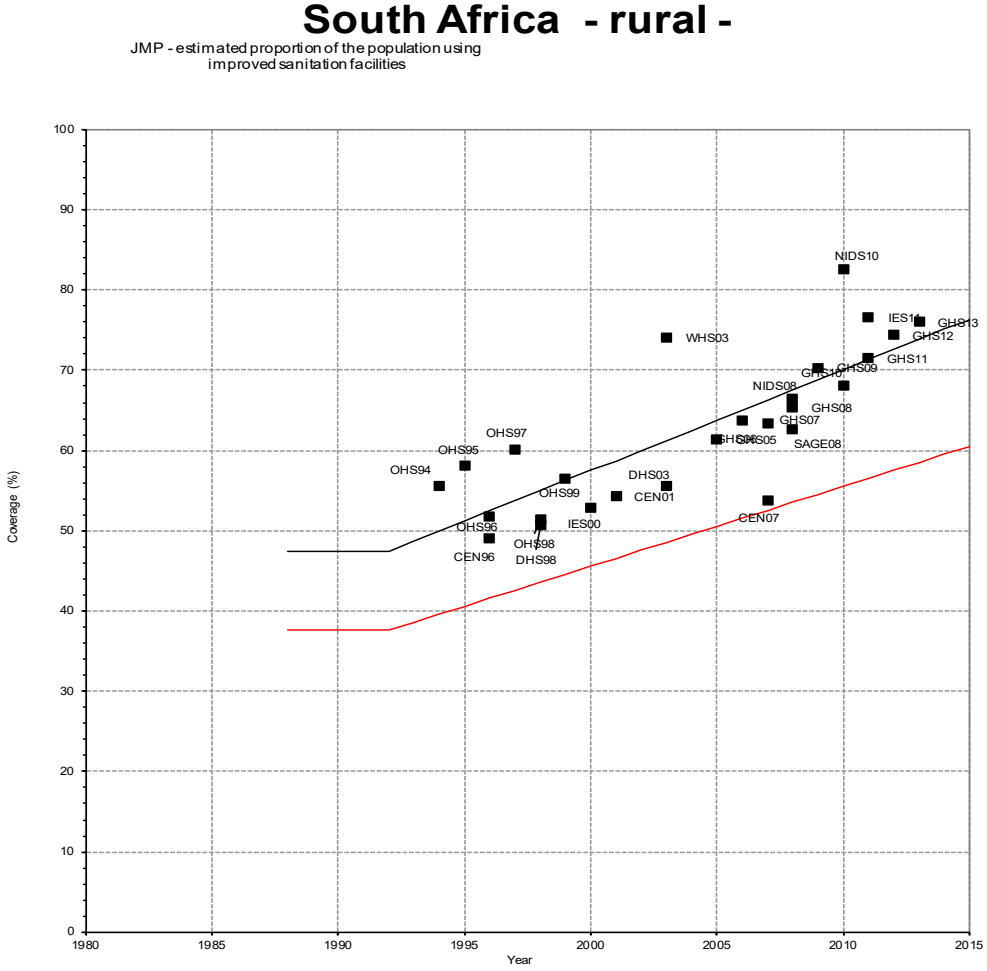



**Figure 66: JMP data source utilized to report on progress with the water supply MDGs. Red line shows data for total percent of households with improve sanitation (own facility) and the black line is the percent of households with improved sanitation (own or shared facility). Data source include: OHS-October Households Survey; Cen=Census; GHS=General Household Survey; DHS=Demographic and Household Survey; WH=World Health Survey and SAGE=Study on Global Ageing and Adult Health (taken from UNICEF and World Health Organization, 2015).**

# 13 APPENDIX 3: ADDITIONAL OR ADJUSTED QUESTIONS IN THE ANNUAL GHS

Figure 67: GHS SURVEY QUESTION ADJUSTMENTS/ADDITIONA BETWEEN 2003 AND 2015

| 2004 GHS | 2005 GHS | 2006 GHS | 2009 GHS | 2010 GHS | 2012 GHS | 2013 GHS |
|---|---|---|---|---|---|---|
| *New question*<br>4.20 How long does it take members of the household to walk to the water source? | *Adjusted question*<br>4.20 How long does it take members of the<br>household to walk to the main water source if not in dwelling, yard or on site? | *Adjusted question*<br>4.20 How far is the water source for drinking from the dwelling, yard or site (200 m equals two football fields?) | | | | |
| *New question*<br>4.21 How many 20-litre buckets of water, on average, does the household use per day? | | Removed from survey | | | | |
| *New question*<br>4.22 Does this household have access to piped water from a local or regional water scheme? | *Adjusted question*<br>4.22 Does this household have access to piped water from a local municipality? | | | | | |
| *New question*<br>4.24 How much does the household pay for water per month? | | Removed from questionnaire | | | | |
| *New question* | Adjusted question | | | | | |

| 2004 GHS | 2005 GHS | 2006 GHS | 2009 GHS | 2010 GHS | 2012 GHS | 2013 GHS |
|---|---|---|---|---|---|---|
| 4.25 Why does the household not pay for water? | 4.26 Why does the household not pay for water? | | | | | |
| *New question*<br>4.29 Does this household receive free water? | | Removed from the questionnaire | Returned to questionnaire | | | |
| *New question*<br>4.30 Was water cut off for non-payment for this household in the past month? | | Removed from the questionnaire | | | | |
| *New question*<br>4.31 Does this household use the water for…. | Adjusted question<br>4.33 Does this household use the piped water for… | Removed from the questionnaire | | | | |
| *New question*<br>4.32 Do household members treat the water used for drinking? | | | | | | |
| *New question*<br>4.33 Do household members treat the water used for food preparation? | | Removed from survey | | | | |
| *New question*<br>4.34 Which method do household members use to treat the water? | | Removed from the questionnaire | | | | |
| *New question* | | Removed from the questionnaire | | | | |

| 2004 GHS | 2005 GHS | 2006 GHS | 2009 GHS | 2010 GHS | 2012 GHS | 2013 GHS |
|---|---|---|---|---|---|---|
| 4.35 During the past 12 months did you or any member of the household used bottled water at home because you thought the water quality was poor? | | | | | | |
| | *New question*<br>4.23 How do you rate the municipal water services you receive? | | | | | |
| | *New question*<br>4.29 Has the household been without piped water for 7 days in total or more at any time in the last year? | | | | | |
| | *New question*<br>4.30 Is there adequate water pressure? | Removed from the questionnaire | | | | |
| | *New question*<br>4.32 Was water cut off for non-payment for this household in the past month? | Removed from the questionnaire | | | | |
| | | | 3.22 Thinking about the interruptions in your municipal water supply over the last 12 months, was any specific interruptions longer than two days | | | |

| 2004 GHS | 2005 GHS | 2006 GHS | 2009 GHS | 2010 GHS | 2012 GHS | 2013 GHS |
|---|---|---|---|---|---|---|
| | | | 3.23 If you add all the days that your municipal water supply was interrupted over the last 12 months, was it more than 15 days in total? | | | |
| | | | | 3.14b Did you use piped or tap water at any time in the past while living in this community, but have stopped as a result of the system<br>breaking down? | | |
| | | | | | 3.19b *Ask if 'Yes' in 3.19a*<br>If yes, what was the main reason for the interruption? | |
| | | | | | 3.23 *Ask if flush toilet connected to public sewerage (option1) in Q3.22*<br>Does this household pay for the sewerage system? | |
| | | | | | 3.25 Is the toilet facility in the dwelling, in the yard or outside the yard? | |
| | | | | | 3.26 How far is the nearest toilet facility to which the | |

| 2004 GHS | 2005 GHS | 2006 GHS | 2009 GHS | 2010 GHS | 2012 GHS | 2013 GHS |
|---|---|---|---|---|---|---|
| | | | | | household has access? (200 m is equal to the length of two football/soccer fields) | |
| | | | | | | 5.26 During the past 6 months, have you experienced any of the following problems with regards to the toilet facility usually used by this household? |

# 14 APPENDIX 4: COMPARISION OF CENSUS WATER SUPPLY AND SANITATION QUESTIONNAIRE QUESTIONS

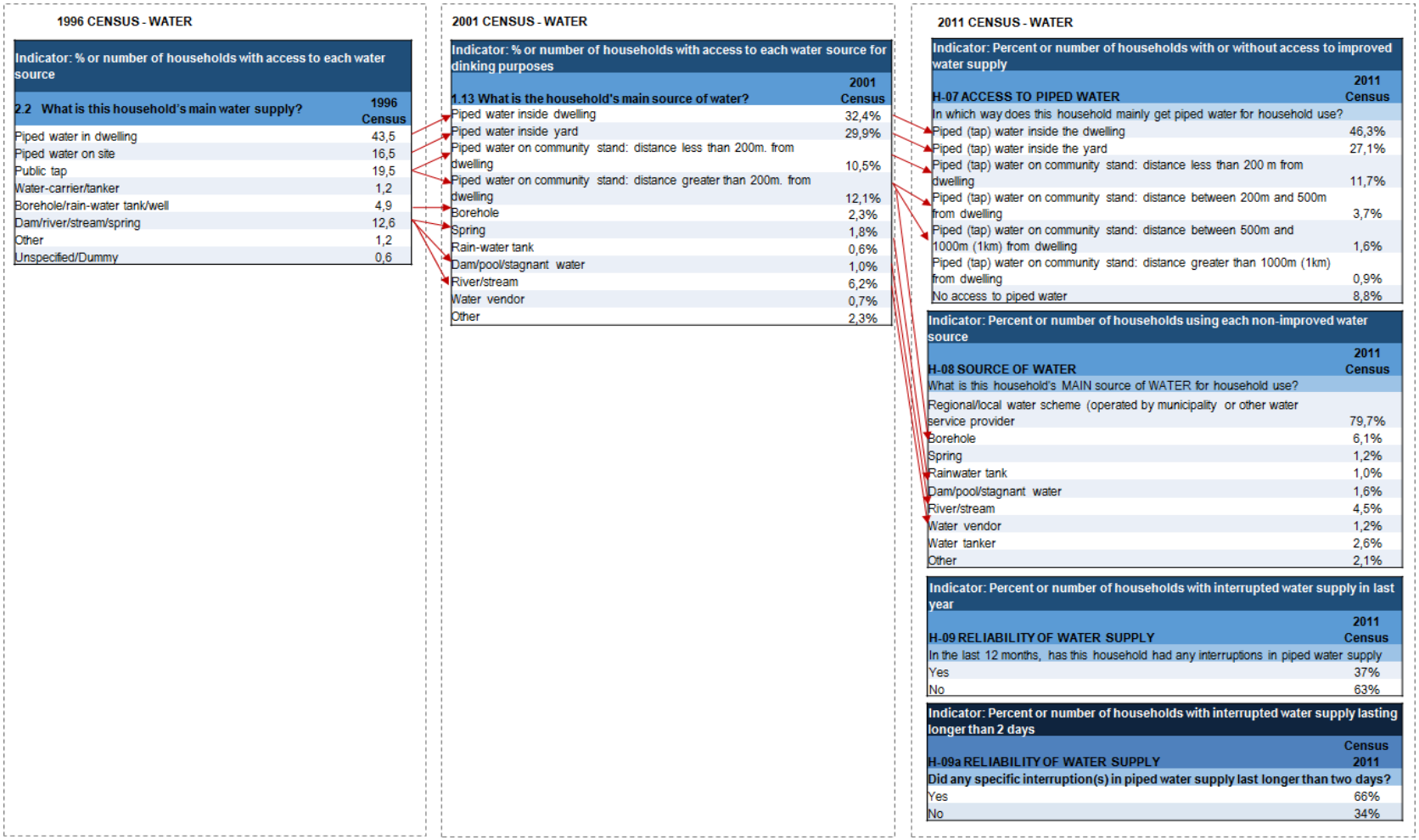



Figure 68: Water supply questions included in the 1996, 2001 and 2011 national census

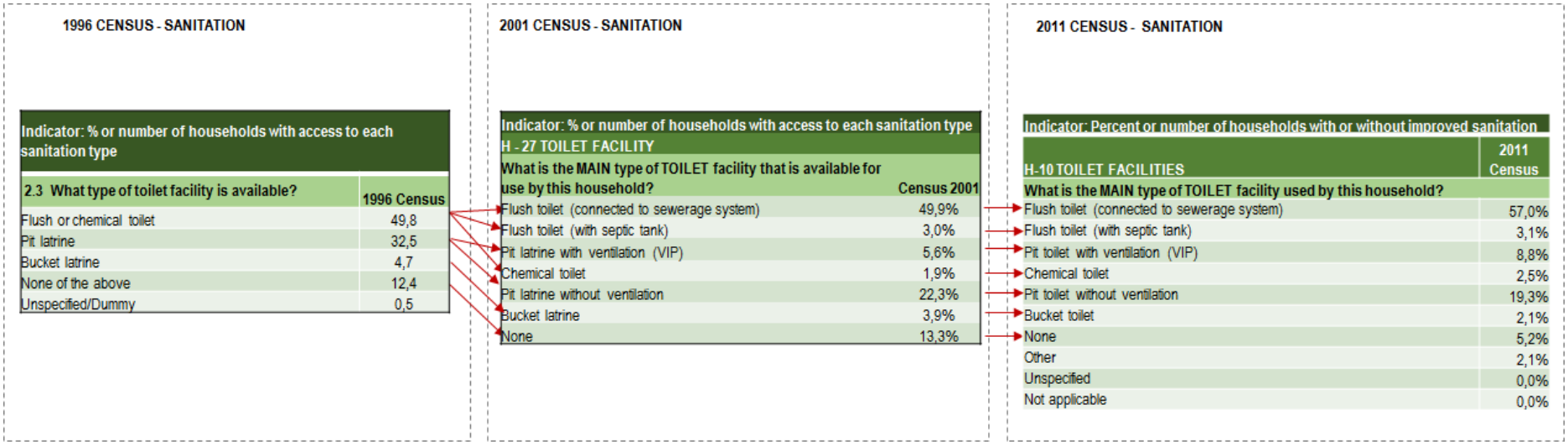



Figure 69: Sanitation questions included in the 1996, 2001 and 2011 national census survey

# 15 APPENDIX 5: SUSTAINABLE DEVELOPMENT GOALS AND TARGETS

**Table 48: The 17 SDGs together with the 169 Targets and Tier 1 Indicators as classified by the IAEG-SDG (Dunning and Kalow, 2016, UN, undated)**

| GOAL | TARGETS | |
|---|---|---|
| Goal 1. End poverty in all its forms everywhere | 1.1 | By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day |
| | 1.2 | By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions |
| | 1.3 | Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable |
| | 1.4 | By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance |
| | 1.5 | By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters |
| | 1.a | Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions |
| | 1.b | Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions |
| Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture | 2.1 | By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round |
| | 2.2 | By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons |
| | 2.3 | By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment |
| | 2.4 | By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality |
| | 2.5 | By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed |
| | 2.a | Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries |

| GOAL | TARGETS | |
|---|---|---|
| | 2.b | Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round |
| | 2.c | Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility |
| Goal 3. Ensure healthy lives and promote well-being for all at all ages | 3.1 | By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births |
| | 3.2 | By 2030, end preventable deaths of new-borns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births |
| | 3.3 | By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases |
| | 3.4 | By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and wellbeing |
| | 3.5 | Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol |
| | 3.6 | By 2020, halve the number of global deaths and injuries from road traffic accidents |
| | 3.7 | By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes |
| | 3.8 | Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all |
| | 3.9 | By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination |
| | 3.a | Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate |
| | 3.b | Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all |
| | 3.c | Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States |
| | 3.d | Strengthen the capacity of all countries, developing countries, for early warning, risk reduction and management of national and global health risks |
| Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all | 4.1 | By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes |
| | 4.2 | By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education |
| | 4.3 | By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university |

| GOAL | TARGETS | |
|---|---|---|
| | 4.4 | By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship |
| | 4.5 | By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations |
| | 4.6 | By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy |
| | 4.7 | By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development |
| | 4.a | Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all |
| | 4.b | By 2020, substantially expand globally the number of scholarships available to developing countries, least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries |
| | 4.c | By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States |
| Goal 5. Achieve gender equality and empower all women and girls | 5.1 | End all forms of discrimination against all women and girls everywhere |
| | 5.2 | Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation |
| | 5.3 | Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation |
| | 5.4 | Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate |
| | 5.5 | Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life |
| | 5.6 | Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences |
| | 5.a | Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws |
| | 5.b | Enhance the use of enabling technology, information and communications technology, to promote the empowerment of women |
| | 5.c | Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels |
| Goal 6. Ensure availability and sustainable management of water and sanitation for all | 6.1 | By 2030, achieve universal and equitable access to safe and affordable drinking water for all |
| | 6.2 | By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations |
| | 6.3 | By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally |

| GOAL | TARGETS | |
|---|---|---|
| | 6.4 | By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity |
| | 6.5 | By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate |
| | 6.6 | By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes |
| | 6.a | By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies |
| | 6.b | Support and strengthen the participation of local communities in improving water and sanitation management |
| Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all | 7.1 | By 2030, ensure universal access to affordable, reliable and modern energy services |
| | 7.2 | By 2030, increase substantially the share of renewable energy in the global energy mix |
| | 7.3 | By 2030, double the global rate of improvement in energy efficiency |
| | 7.a | By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology |
| | 7.b | By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support |
| Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | 8.1 | Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries |
| | 8.2 | Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors |
| | 8.3 | Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services |
| | 8.4 | Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead |
| | 8.5 | By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
| | 8.6 | By 2020, substantially reduce the proportion of youth not in employment, education or training |
| | 8.7 | Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms |
| | 8.8 | Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, women migrants, and those in precarious employment |

| GOAL | TARGETS |
|---|---|
| | 8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products |
| | 8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all |
| | 8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries |
| | 8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization |
| Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all |
| | 9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries |
| | 9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets |
| | 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries acting in accordance with their respective capabilities |
| | 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending |
| | 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States |
| | 9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities |
| | 9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020 |
| Goal 10. Reduce inequality within and among countries | 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average |
| | 10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status |
| | 10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard |
| | 10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality |
| | 10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations |
| | 10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions to deliver more effective, credible, accountable and legitimate institutions |

| GOAL | TARGETS |
|---|---|
| | 10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies |
| | 10.a Implement the principle of special and differential treatment for developing countries, least developed countries, in accordance with World Trade Organization agreements |
| | 10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes |
| | 10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent |
| Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable | 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums |
| | 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons |
| | 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries |
| | 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage |
| | 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations |
| | 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management |
| | 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, for women and children, older persons and persons with disabilities |
| | 11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning |
| | 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels |
| | 11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials |
| Goal 12. Ensure sustainable consumption and production patterns | 12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries acting, with developed countries taking the lead, considering the development and capabilities of developing countries |
| | 12.2 By 2030, achieve the sustainable management and efficient use of natural resources |
| | 12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses |
| | 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment |
| | 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse |
| | 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle |

| GOAL | TARGETS |
|---|---|
| | 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities |
| | 12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature |
| | 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production |
| | 12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products |
| | 12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities |
| Goal 13. Take urgent action to combat climate change and its impacts | 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries |
| | 13.2 Integrate climate change measures into national policies, strategies and planning |
| | 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early |
| | 13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible |
| | 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities |
| Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development | 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, from land-based activities, including marine debris and nutrient pollution |
| | 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and act for their restoration to achieve healthy and productive oceans |
| | 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels |
| | 14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics |
| | 14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information |
| | 14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation |
| | 14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism |
| | 14.an Increase scientific knowledge, develop research capacity and transfer marine technology, considering the Intergovernmental |

| GOAL | TARGETS | |
|---|---|---|
| | | Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, small island developing States and least developed countries |
| | 14.b | Provide access for small-scale artisanal fishers to marine resources and markets |
| | 14.c | Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want" |
| Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss | 15.1 | By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, forests, wetlands, mountains and drylands, in line with obligations under international agreements |
| | 15.2 | By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally |
| | 15.3 | By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world |
| | 15.4 | By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, to enhance their capacity to provide benefits that are essential for sustainable development |
| | 15.5 | Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species |
| | 15.6 | Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed |
| | 15.7 | Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products |
| | 15.8 | By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species |
| | 15.9 | By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts |
| | 15.a | Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems |
| | 15.b | Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation |
| | 15.c | Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities |
| Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and | 16.1 | Significantly reduce all forms of violence and related death rates everywhere |
| | 16.2 | End abuse, exploitation, trafficking and all forms of violence against and torture of children |
| | 16.3 | Promote the rule of law at the national and international levels and ensure equal access to justice for all |
| | 16.4 | By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime |
| | 16.5 | Substantially reduce corruption and bribery in all their forms |
| | 16.6 | Develop effective, accountable and transparent institutions at all levels |

| GOAL | TARGETS |
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| inclusive institutions at all levels | 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels |
| | 16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance |
| | 16.9 By 2030, provide legal identity for all, including birth registration |
| | 16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements |
| | 16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in developing countries, to prevent violence and combat terrorism and crime |
| | 16.b Promote and enforce non-discriminatory laws and policies for sustainable development |
| Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development | Finance<br>17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection<br>17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries<br>17.3 Mobilize additional financial resources for developing countries from multiple sources<br>17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress<br>17.5 Adopt and implement investment promotion regimes for least developed countries |
| | Technology<br>17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, at the United Nations level, and through a global technology facilitation mechanism<br>17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed<br>17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, information and communications technology |
| | Capacity-building<br>17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation |

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| | Trade<br><br>17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda<br><br>17.11 Significantly increase the exports of developing countries, with a view to doubling the least developed countries' share of global exports by 2020<br><br>17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access |
| | Systemic issues: Policy and institutional coherence<br><br>17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence<br><br>17.14 Enhance policy coherence for sustainable development<br><br>17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development |