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4 SEPTEMBER 2012

CHALLENGES IN WATER SUPPLY: SOUTH AFRICA

1. INTRODUCTION

After the first democratic elections in South Africa in 1994, the new government made universal water supply by 2014 a priority. The country faced the challenge of providing 14 million people with access to water and 24 million people with basic sanitation services. By 2001 the water backlog was halved. South Africa was committed to providing potable water to all its people by 2008 and sanitation by 2010. A threat to the original gains made in service delivery improvements is the inability of responsible departments (sanitation and basic water services responsibilities shared between Departments of Corporate Governance (DCoG), Human Settlements (DHS) and Water Affairs (DWA)), to effectively eliminate service delivery backlogs, while more recently, infrastructure maintenance shortfalls are also threatening water and sanitation services as Apartheid-era infrastructure reaches the end of their serviceable life span.

An indication of this is the continual postponement of attaining the original goal of universal access to basic water and sanitation services by 2008. The goal was first shifted to 2010, and more recently to 2014.[1] The DWA has admitted that the country faced major challenges in terms of water and sanitation service delivery[2] These challenges has serious implication for basic health and education standards in South Africa. A study of household level indicators in Madagascar[3] clearly found linkages between poverty, education, access to water and household use of water. At least two important matters were highlighted regarding water and sanitation infrastructure in the reports cited in this document. First, there are the criteria used for assessing "safe" water conditions, which some authors[4] consider to be too simplistic, and then there are the differences in health associated with an increase in water availability above the levels considered adequate. It was found[5] that in Madagascar, increases in water use above basic criteria (minimum daily requirements) were more closely associated with improved hygiene, thus improving the basic hygiene and health of the household. This, in turn, improved other indicators such as basic education and influencing the attainment of MDGs influenced by individual hygiene levels.

In South Africa, as with most other developing nations, the majority of citizens lacking access to safe drinking water and sanitation services are from rural areas.[6] Data presented by Lawless[7] on critical shortages of civil engineering professionals in local government underlines another finding reported by the World Health Organisation (WHO) in their

[1] Municipal Indaba (2008).
[2] PMG (2011).
[3] Larson *et al.* (2006).
[4] Bain *et al.* (2012).
[5] Larson *et al.* (2006).
[6] World Health Organisation (2012).
[7] Lawless (2005).

assessment of challenges experienced in extending and sustaining water related infrastructure and services: Government policies and programmes typically place far too little emphasis on ensuring adequate financial and human resources to sustain or expand infrastructure.[8] These problems will be expanded upon briefly in this document. It is troubling, however, that the current water service delivery situation in South Africa reflects international trends described in the WHO report:[9]

- Countries with service delivery challenges are at risk of losing gains made with service delivery;
- Progress on service delivery is not possible due to lack of financial and human resources;
- Drinking water receives an inappropriate volume of infrastructure funding, with the lack of sanitation services threatening basic health care gains made;
- Operation and maintenance of infrastructure receives insufficient funding, which undermines sustainability;
- There is insufficient skilled staff to operate and maintain infrastructure, both in local government as well as in supply side industries;
- Funding is disproportionally allocated to urban areas, resulting in greater service delivery problems in rural areas.

2 The Critical Role Of Water In South Africa's development plans

When considering which underlying causes could be responsible for the non-attainment of development goals, financial, technical or human capital constraints are likely to be considered. In terms of environmental parameters, water, either in the form of drought impacts, agricultural capacity or pollution/health consideration is a vital consideration. Without proper nutrition and sanitation, most developing countries can, and indeed will, stumble to reach these goals. According to the Japan Water Forum[10] one third of all the current Millennium Development Goals (MDGs) depend on water, while the United Nations Water Assessment Programme[11] described key links between water and all 8 MDGs. In terms of South African MDG goals that are unlikely to be met, or where any regression from current levels of development could threaten milestones reached, Goals 1, 4, 5 and 7 are the most critical. These are:

- Goal 1: eradicate extreme poverty and hunger:
  - Target 2: halve, between 1990 and 2015, the proportion of people who suffer from hunger;
  - Target 1: halve; between 1990 and 2015, the proportion of people whose income is less than one dollar a day;
- Goal 4: reduce child mortality:

[8] World Health Organisation (2012).
[9] Ibid.
[10] Japan Water Forum (undated).
[11] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/WWAP_Water_and_MDGs.pdf.

- Target 5: reduce by two thirds between 1990 and 2015, the under five mortality rate
- Goal 5: improve maternal health:
  - Target 6: reduce by three quarters, between 1990 and 2015, the maternal mortality ratio;
- Goal 7: ensure environmental sustainability:
  - Target 10: halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.[12]

According to calculations presented by the Japan Water Forum,[13] 27 per cent of "Poverty", 36 percent of "Hunger" (MDG1); 33 per cent of "Get Injured", 30 per cent of "Get Ill", 20 per cent of "Undernourishment", 30 per cent of "Insufficient medical treatment" (MDG4); 38 per cent of "Unsafe Childbirth", 51 per cent of Poor Maternal Health" (MDG5) and 100 per cent of water and sanitation concerns are influenced by water. The direct link between access to safe drinking water and providing proper sanitation to fighting poverty and hunger, safeguarding human health, reducing child mortality, promoting gender equality and the management and protection of natural resources[14] is well documented. It is therefore clear that improved water resource management, particularly in terms of sanitation, should be a key priority for a water stressed country such as South Africa. Future sustainable development will also hinge significantly on this principle.

3 The State Of Drinking Water And Sanitation Infrastructure In South Africa

Of concern is that water service shortfalls are currently experienced in sectors where significant bulk water supply infrastructure at all levels of government (Departmental through Water Management Agencies to Municipal infrastructure) will be required to reach Millennium Developmental Goals committed to by government.[15] Provinces such as KwaZulu-Natal, the Eastern Cape and Limpopo are experiencing the greatest service delivery backlogs. Most service delivery shortfalls were the result of bulk infrastructure[16] or connector infrastructure[17] shortcomings. In 2011, the acting DG of the Department of Water Affairs estimated that the total cost of all required water infrastructure (bulk, connector and certain rehabilitation and refurbishment needs) could well exceed R110 billion.[18] In many instances, the complex interactions and fragmented responsibility for services and infrastructure management between departments, National and Local government instruments create service delivery challenges.[19] The Department is often mistakenly considered to be the responsible agency for that particular service, and blamed for poor service delivery. Take for instance the poor state of sanitation services in South Africa. It is now widely acknowledged[20] that South Africa

[12] These targets are attained or likely to be attained, but are at risk due to deteriorating water quality conditions.
[13] Japan Water Forum (undated).
[14] Lenton *et al.* (2008).
[15] www.undp.org.za/millennium-development-goals (accessed 15-02-2012). Also see UNDP (2010).
[16] The responsibility of the Department.
[17] The responsibility of Municipalities.
[18] PMG (2011).
[19] Department of Water Affairs (2012b).
[20] DWA (2012b).

will not attain its goal of providing universal sanitation services by 2014. According to a recent DWA publication,[21] the current state of the water sector is far from ideal.

According to a 2011 presentation made by the DWA to the PC Water and Environmental Affairs, at current expenditure and performance trends, it would take a further 15 years to eradicate service delivery backlogs[22] The DWA further states in its 2012 publication[23] that maintaining current levels of development and maintenance will threaten water security, while the increasingly urgent demand from citizens for well-functioning water supply and sanitation services in the midst of water scarcity poses unacceptable economic and socio-political risks. These risks will be intensified by actions required to adapt to and mitigate the expected impacts of climate change. According to the recently released National Climate Change Response White Paper,[24] a wide range of water use and management interventions will be required across the entire range of responsibilities of the Department. Catchment management, water quality assurance, bulk water supply and infrastructure as well as water use allocations will all be influenced by the recommendations of the White Paper.

3.1 Municipal infrastructure:

According to the Department, 11 per cent of South Africans receive no sanitation, 28 per cent are inadequately serviced and 28 per cent are faced with a high risk of failure while in communities with sanitation, 317 Waste Water Treatment Works (WWTW) require urgent attention, 143 have a high risk of failure (not specified if these are included in the 317), 20 per cent are running over their design capacity and 90 per cent are non-compliant with 3 or more effluent determinants.[25] While it is encouraging to note that the construction of bulk infrastructure has seen noticeable increases in funding, growing from an allocation of R443.2 million in 2008/9 to the current 2012/13 allocation of R2.6 billion, the nature of the backlog in terms of sanitation services remains a serious matter. In the light of the critical water infrastructure maintenance backlogs experienced, it is also distressing to notice that the Transfer of Water Schemes budget, which guides the transfer of, operation, management and maintenance of water infrastructure to water service institutions, has decreased for the 2012/13 financial year.

3.2 Large Scale Bulk Infrastructure Development:

According to the National Treasury[26] the Department currently has 151 infrastructure projects ranging in degree of completion from design to handing over. Of concern, however, is that a very large percentage of planning and construction effort appear to be targeted at regional and bulk water supply, with very little apparently being done to alleviate the crisis developing in waste water treatment capacity acknowledged by the Department themselves.[27] With under 16 per cent of infrastructure development targeting waste water treatment projects, it

[21] DWA (undated).
[22] DWA (2011).
[23] DWA (2012b).
[24] National Climate Change Response White Paper (2011).
[25] DWA (2012c).
[26] National Treasury (2012).
[27] DWA (2012).

has to be questioned whether the Department is allocating sufficient resources to the matter. Considering also that poor waste water treatment capacity have downstream (literally and figuratively) impacts on fresh and ground water quality, fresh water ecosystem integrity and health risks to communities, the problem cannot be ignored. Considering the fact that current planning and funding allocations stretch all the way to the 2013/14 financial years with little sign of more effort being directed at waste water treatment capacity development in these years, a serious problem for South African water resource management could be developing. With the looming challenges of climate change and increased pressure on our remaining potable water resources, such a planning shortfall cannot be allowed to continue.

4 Concerns Over Water Quality

The preceding sections underlined the current pressures on relevant departments to maintain current water and waste water infrastructure while expanding infrastructure into rural and urban areas that are still experiencing infrastructure shortfalls. A brief overview of the criteria used to define suitable water supplies for MDG goal attainment revealed a number of potential concerns regarding the suitability of the standards in evaluating the true water quality provided. In recent times, communities have been forced to turn to legal action in order to ensure that safe water is supplied by local municipalities. The obvious question therefore is whether South African drinking water and sanitary services remain of a suitably high standard. Some insights into this question are supplied by the latest set of Blue Drop and Green Drop reports. According to the latest statistics, 41.3 per cent of South African municipalities cannot score above 50% on the Blue Drop score (2011)[28], while 56 per cent of municipalities did not achieve above 50 per cent on the Green Drop score (2011).[29]

4.1 Acid Mine Drainage (AMD)

Acid Mine Drainage (AMD), the pollution of ground and municipal water through seepage of water originating from mines, is rapidly on the increase in the coal and gold mining regions Gauteng and Mpumalanga. While gold mines are typically considered to be the major contributors to AMD impacts, coal mines are also responsible for major impacts in Mpumalanga.[30] Mining activity in important watershed regions of South Africa potentially poses the following risks:[31]

- Mpumalanga Province is the catchment source for some of South Africa's major waterways, including the Komati, Vaal, Crocodile and the Olifants Rivers.
- The pollution levels in Mpumalanga water ways has reached such an extent that water for mining activity needs to be channelled into the mines from the Vaal Dam.
- Pollution of waterways that are or flow into waterways that are shared between countries, such as the Limpopo, will affect neighbouring countries such as

[28] Department of Water Affairs (2011b).
[29] Department of Water Affairs (2011c).
[30] Kardas-Nelson (2010).
[31] Condensed from Kardas-Nelson (2010).

Mozambique, Botswana and Zimbabwe, Lesotho and Swaziland[32]. As noted from the White Paper summary above, there are already agreements in place regarding the prevention of such impacts.

- 12 million consumers and 60% of the South African economy rely and water from the Vaal River system.

Persistent backlogs in service delivery, potentially insufficient expenditure on potable and waste water infrastructure, and increasing pollution threats are clearly taking its toll on the quality of water supplied to South African citizens. While these problems, acknowledged by the relevant departments, will not alter the water MDG status of South Africa, it has to be considered whether the current state of affairs is considered adequate, particularly in the light of the fact that a number of water-related MDGs that reflect more closely on the quality of the water supplied will not be attained by 2015.

5. Human capital

Vacancies in key technical and managerial positions in local and district municipalities are widely acknowledged as having a detrimental effect on service delivery. In a recent investigation[33] into water and sanitation service delivery challenges at Bushbuckridge local municipality, the authors concluded: "There are immense problems of capacity, of institutions and of the individuals within these institutions, at almost every level in Bushbuckridge. While this is widely recognised and acknowledged, it is not being addressed in meaningful and fundamental way..." This state of affairs is not isolated to rural local municipalities. Lawless[34] reports that at local government level, budget constraints, restructuring, the pursuit of equity targets and increased bureaucracy have resulted in an acute shortage of civil professionals. The following statistics are worth noting:

- Only 45 of the 231 local municipalities and 25 of the 47 district municipalities have any civil engineers;
- 42 of the 231 local municipalities, and 4 of the 47 district municipalities have only one civil technician;
- At 38 local and 6 district municipalities there are no technical staff member older than 35 years of age;
- At 79 local and 4 district municipalities there is not a single civil engineer, technologist or technician;
- Overall, municipalities with civil engineering positions reported a 35 percent vacancy rate, while;
- Project Management Units set up to manage Municipal Infrastructure Grant (MIG) funding had little or no capacity;

[32] South Africa Yearbook (2010/11).
[33] Dlamini and Cousins (2009).
[34] Lawless (2005).

- Metros nationally registered a 45 per cent vacancy rate at the same period.[35]

By contrast, 43 percent of all civil engineers present in South Africa in 2005 were employed in private sector consultancies. For these consultancies, the average capacity utilisation was over 90%, with many operating at levels exceeding 100% of company capacity. This resulted in 80% of companies indicating that they are actively searching for more civil engineering professionals to employ. It can therefore not be argued that there could not be any general lack of demand for the services of civil engineering professionals. It has to be concluded that better working conditions, employment criteria or remuneration levels in the private sector have been responsible for the absorption of many new and experienced professionals, out-competing local and provincial government employers for available staff. As all spheres of government traditionally employed around 24 percent of all civil engineering graduates,[36] the vacancies are also responsible for a lack of training opportunities and mentorship for young graduates. Lawless[37] recommended that some of the roughly 6000 civil engineering graduates (engineers who graduated between 1963 and present but whom have left the industry) that have retired from the industry but have not emigrated be re-employed to act as mentors for young graduates.

6. CONCLUSION

In order for governments to implement sustainable development policies, they need to assess and evaluate their policies to ensure that their outcomes are as planned. At the onset of a switch to such policies, it is necessary to change unsustainable patterns of consumption and production.[38] This is one of the overarching objectives of, and an essential requirement for sustainable development, as recognized by WSSD.[39] The successful achievement of this switch to sustainability domestically will require strong political will, sound policies, institutions and governance, and effective international co-operation. As can clearly be seen from the development of a sustainability response in post-apartheid South Africa, the number of policies developed is substantial. Less obvious though, is the success rate of these policies. In many instances, the effectiveness of the policies in attaining sustainability is not as desired. The slow pace and continual postponement of goals such as universal access to safe drinking water is a clear example of this problem.

The lack of capacity to implement policy, particularly at municipal level, has been widely acknowledged before[40], and coupled with fragmentation of responsibilities, escalating cost and

[35] Ibid.
[36] Lawless (2005).
[37] Lawless (2005).
[38] http://www.un.org/esa/desa/aboutus/keyissues.html.
[39] The Johannesburg Summit 2002, the World Summit on Sustainable Development (WSSD) brought together tens of thousands of participants (heads of State and Government, national delegates, leaders from NGOs, businesses and other major groups to focus attention on and direct action toward meeting difficult sustainable development challenges.
[40] National Development Plan (2011).

poor focus in prioritizing expenditure provide some of the largest stumbling blocks towards sustainable agricultural development.

The National Development Plan[41] clearly outlines a multi-pronged approach to sustainable development. There will therefore not be a single model approach, but one where the best interventions for the particular setting are explored. Key planning strategies include:

- A need to combat the marginalisation of the poor through access to resources, rural infrastructure and government resources.
- Rural economies should be supported through a combination of agriculture, mining, tourism, value adding (agri-processing) and fisheries.[42] Important, however, is the planning for resource poor rural areas, which include the expansion of basic health care, education, basic services and social security.[43]
- Smallholder farmers should be the primary beneficiaries of irrigation and dry land agriculture expansion.[44]
- The empowerment of farm workers and encourage collaboration between successful commercial farmers and recipients of land reform, while also ensuring that new commercial farmers receive access to market chains.
- Enhance the ability of relevant Departments to supply quality extension support services, especially to beneficiaries of Land Reform projects and identify which projects have been stalled because of the lack of follow-up support.[45]

It can be safely argued that Parliament has made substantial progress on the development of policies and legislation aimed at improving sustainable development, although a number of key policies regarding Spatial Planning and Land Use Management, Land Reform and Tenure Reform are overdue. What is required urgently is for Parliament to set clear targets for the achievement of the implementation of socio-economic reforms According to the Yale centre for Environmental Law and Policy,[46] policymakers need to set clear policy targets and shift toward more analytically rigorous environmental protection efforts at the global, regional, national, state/provincial, local, and corporate scales. This suggestion would imply that Parliament should sharpen its accountability, consultation and oversight function in order to more closely monitor the implementation of legislation and policy.

In order to achieve such detailed scrutiny of the effectiveness of the three spheres of government, greater effort has to be invested in the data collection and collation capacity of lower spheres (municipal and provincial) of government. Far greater value will be derived from Annual Reports

[41] National Planning Commission (2011).
[42] This vision for resource rich areas covers both aspects of Right to Food, namely the ability to either produce or alternatively earn sufficient income to purchase adequate food.
[43] A clear indication that the most vulnerable poor rural communities residing in resource poor areas need greater access to social safety nets, as highlighted in the Special Rapporteur's report.
[44] An important aspect of this support should be the implementation of agro-ecological principles, as suggested by the Special Rapporteur but also highlighted in the White Paper on Climate Change.
[45] This is an extremely important point. As observed during recent oversight visits, almost none of the agricultural projects were functional due to poor planning, institutional weakness (particularly in terms of transferring ownership or resolving ownership disputes) or lack of extension support.
[46] Yale Centre for Environmental Law and Policy (2010).

that allows Parliament to analyze performance by specific issue, policy category, or peer group[47]. At present, departmental and Ministerial reporting are being done at a data level totally devoid of detail, from which no critical evaluation of policy implementation can possibly flow. Such an analysis can assist in refining policy choices, understanding the determinants of environmental progress, and maximizing the return on governmental investments. The implications of such a commitment in time and resources is significant, but pales in comparison to the potential annual improvement in government spending efficiency. The current disparity between community interaction and departmental reports to Parliament should be considered as a significant indication that greater effort need to be invested in the oversight and consultation functions of Parliament.

7. REFERENCES

Bain, R.E.S., Gundry, S.W., Wright, J., Yang, H., Pedleyc, S. And Bertram, J.K. (2012) Accounting for water quality in monitoring access to safe drinking-water as part of the Millennium Development Goals: lessons from five countries. *Bull World Health Organ,* 90: 228 - 235

Commission of the European Communities (2009). *Millennium Development Goals — Impact of the Financial Crisis on Developing countries.* Commission staff working document accompanying the communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Supporting developing countries in coping with the crisis.

Department of Water Affairs (2011a) DWA and the MDGs: Involvement, actions and issues.

Department of Water Affairs (2011b) 2011 Blue Drop Report.

Department of Water Affairs (2011c) 2011 Green Drop Report.

Department of Water Affairs (2012b) Revised Strategic Plan for the Fiscal Years 2012/13-2016/17.

[47] Yale Centre for Environmental Law and Policy (2010).

Department of Water Affairs (2012c) Report on the status of sanitation services in South Africa.

Department of Water Affairs (undated) Institutional Reform and Re-alignment: A strategic framework for institutional realignment and reform.

IISD (2011) Strategy for Achieving Transformative Change: Better Living for All – Sustainability. 2010-2011 Annual Report.

Japan Water Forum (undated) MDGs and Water.

Kardas-Nelson, M. (2010) Mpumalanga's not-so-clean coal. *Mail and Guardian*, 29 November 2010.

Larson, B. Minten, B. And Razafindralambo, R. (2006) Unravelling the Linkages between the Millennium Development Goals for Poverty, Education, Access to Water and Household Water Use in Developing Countries: Evidence from Madagascar. Journal of Development Studies, (42)1: 22 – 40.

Lawless, A. (2005) Numbers and Needs, Addressing imbalances in the Civil engineering profession. South African Institution of Civil Engineering, Halfway House, South Africa.

Legal Resources Centre (2012) Press Release: Judgement in the Carolina Water Pollution Case.

Lenton, R., Lewis, K., and Wright, A.M. (2008) Water, Sanitation and the Millennium Development Goals. Journal of International Affairs, Spring/Summer 2008, vol. 61, no. 2.

Municipal Indaba (2008) Finance Syndicate Group: Syndicate Discussion Paper # I
Status and challenges of financing water and sanitation towards MDGs
National Climate Change Response White Paper (2011) Pretoria, Government Printer.

National Planning Commission (2011) National Development Plan: Vision for 2030

National Treasury (2011) Vote 38. Water Affairs: Budget Summary.

National Treasury (2012) Vote 38. Water Affairs: Budget Summary.

Parliamentary Monitoring Group (PMG) (2011) Department of Water Affairs on 2011 Strategic Plan and Budget. [Internet] Available form: www.pmg.org.za/report/20110330-department-of-water-affairs-2011-strategic-plan-20112012-budget [Accessed 9April 2012].

South Africa Yearbook 2010/11, Paarl Media, Paarl, South Africa.

The United Nations for Sustainable Development in Brief: Selected Key Issues. [Internet] Available from: http://www.un.org/esa/desa/aboutus/keyissues.html [Accessed 29 May 2012].

United Nations World Water Assessment Programme: Water for the Millennium Development Goals: Why managing water resources wisely is key to achieving the MDGs. [Internet] Available from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/WWAP_Water_and_MDGs.pdf [Accessed 14 June 2012].

www.undp.org.za/millennium-development-goals. [Accessed 15-02-2012].

World Health Organisation (2012) UN-water global annual assessment of sanitation and drinking-water (GLAAS) 2012 report: the challenge of extending and sustaining services.

Yale Centre for Environmental Law and Policy (2010). 2010 Environmental Performance Index. Summary for Policy Makers. Columbia University.