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## The Effect of Consumer Expectations and Perceptions Regarding Sanitation on Access to Clean Water

**Louiza Duncker**

The Council for Scientific and Industrial Research (CSIR)

### **Biography**

Louiza Duncker is a principal researcher at the CSIR and has a Master degree in Anthropology from the University of Pretoria. She has been involved in and managed research in rural and urban areas on social dynamics, behavioural patterns in technology use, and impact assessments through projects on gender, housing, water and sanitation, and infrastructure technologies for sustainable human settlements for 22 years. The results were implemented in a number of policies, strategies, manuals and guidelines for the water-sanitation and human settlements sectors.

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# The Effect of Consumer Expectations and Perceptions Regarding Sanitation on Access to Clean Water

Louiza Duncker

## **Abstract**

In the face of rapid urbanisation and population growth, water in urban areas is becoming more and more polluted by human activities. One of the main sources of pollution is the wash-off from areas with inadequate sanitation and open defecation practices, such as dense informal settlements in and around urban areas. Substantial work is being done in South Africa to provide access to low-water and no-water toilets in an effort to minimise wash-off and to reduce the burden on wastewater treatment works. But, the perceptions and expectations of people, whether factually correct or not, are a major barrier to the acceptance and sustainability of these facilities. Dissatisfaction with anything other than water-borne sanitation has resulted in increasing numbers of social protests, some violent – costing the country millions of dollars in loss of economic productivity and damage to infrastructure. The challenge is to address this disjuncture between what people believe and aspire to, and what is possible in providing sanitation services. The suitability of sanitation facilities and services needs to be grounded in a deep understanding of user perceptions and desires, coupled with meaningful participation and involvement in the urban planning process. Flexibility is needed from government, to integrate non-governmental and community initiatives in its planning, and to allow these initiatives to become common practices.

## **Keywords**

Clean Water, Sanitation, User Perceptions, Appropriate Technology, Participative Decision Making

## **Introduction**

“Water is a precondition for human existence” says UN Deputy Secretary-General, Jan Eliasson. Water is health, water is energy, water is food, water is climate, and water is equality. Sanitation is all of these, with an added dimension of dignity.

Water policies in South Africa are based upon the principles of equity, sustainability and efficiency within a resource protection approach, which supports the sustainable use of water resources in a water-scarce environment, and emphasises the need to protect fresh water sources that are under threat due to pollution and contamination. South Africa regularly experiences drought and generally deals with significant water stress. The country may face complete water scarcity within the next fifteen years

unless its population adapts their behaviour regarding water use, specifically potable water use for sanitation.

In the face of rapid urbanisation and population growth, water in urban areas is becoming more and more polluted by human activities. This rapid urbanisation has led to extraordinary demands on water, accompanied by the disposal of equally large volumes of wastewater into rivers, lakes and the groundwater. Pollution from the wash-off in areas with inadequate sanitation and open defecation practices, such as dense informal settlements in and around urban areas, is a major contributor. Another main pollution source is from a number of wastewater treatment plants that are unable to cope with the increased volumes of wastewater from rapidly growing urban areas. This resulted in many of the country's water resources being polluted with inadequately treated effluent, consequentially harming downstream communities and the health of people, damaging ecosystems, and increasing the burden of purifying water abstracted from rivers for drinking. The World Health Organization (WHO) recognised that, from 1990 to 2011, global efforts have helped 2.1 billion people gain access to improved drinking water, but that not all of these water sources were necessarily safe (WHO/ UNICEF, 2013). Declining water quality is thus invalidating the advances made over the past twenty years in improving access to drinking water.

### **Sanitation for clean drinking water**

Water and sanitation are inseparable and interdependent, the one impacts on the other. Water supply is needed for sanitation services at an acceptable level of reliability, quality and accessibility; but ineffective sanitation services leads to contamination of water resources, rendering water unfit for use.

Having safe drinking water is a human need and a right for every man, woman and child. People need clean water to maintain their health and dignity, and is essential for being able to go to work or attend school. On 30 September 2010, the UN Human Rights Council adopted, by consensus, a resolution affirming that the right to water and sanitation are human rights. The resolution adopted by the Human Rights Council took an important further step in affirming that:

The human right to safe drinking water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity. This means that for the UN, the right to water and sanitation is contained in existing human rights treaties and is therefore legally binding. The right to water and

sanitation is a human right, equal to all other human rights, which implies that it is justiciable and enforceable (SAHRC, 2014).

The Water Service Act (Act No. 108 of 1997), the principal policy regulating water service provision in South Africa, legitimises the right to sanitation that ensures an environment that is not harmful to human health and well-being by mandating that everyone has a right to basic water supply and a basic sanitation facility. To achieve this, every water services institution or authority must, in its water services development plan, provide for reasonable measures to realise these rights (South Africa, 1997). South Africa's commitment to universal access to basic sanitation originates from the very first developmental policies of the new democratic government of 1994, including the White Paper on Reconstruction and Development (RDP), which provided government's vision for the fundamental transformation of South Africa's society and demonstrated the manner in which government would implement and manage processes to achieving this (South Africa, 1994). With the looming water scarcity South Africa faces in the near future, Minister Mokonyane, the minister responsible for water and sanitation has highlighted the need for an integrated water approach that entails a sustainable and holistic value chain of water supply from source to tap and from tap back to source (DWS, 2014). Large amounts of potable water go down the drain for sanitation and are essentially wasted, placing more stress on the water situation. In her budget speech on 21 May 2015 she said: "It's not all about flushing," in effect asking the citizens of the country to pay for services and save water by not insisting on water-borne sanitation solutions. As pressures on freshwater resources grow around the world and as new sources of supply become increasingly scarce, expensive, or politically controversial, new ways and facilities of meeting water needs for sanitation services need to be sought.

Clean drinking water is dependent on sustainable sanitation services. Provision of sustainable sanitation services is becoming more challenging as demand increases, water availability deteriorates, costs per capita escalates, and the present sanitation systems are poorly operated and maintained (Duncker & Wilkinson, 2014). Without hygienic sanitation, people (mostly children) suffer from water-related diseases and die - around 315,000 children under-five die every year from diarrhoeal diseases caused by dirty water and poor sanitation (UNICEF, 2015). An estimated 443 million school days are lost each year due to water-related diseases ([https://thewaterproject.org/water-scarcity/water\\_stats](https://thewaterproject.org/water-scarcity/water_stats)). Government departments and municipalities have been struggling to provide adequate and sustainable water and sanitation infrastructure and services in the fast-growing formal and informal urban areas in South Africa. The mushrooming

population, combined with institutional incapacity, apply immense pressure on existing water and sanitation services infrastructure, resulting in lack of maintenance, frequent system breakdowns and social distress.

Substantial work is being done in South Africa to provide access to low-water and no-water toilets in an effort to save water, reduce the burden on wastewater treatment works and minimise wash-off, but the perceptions and expectations of people, whether factually correct or not, are a major barrier to the acceptance and sustainability of these facilities. The main challenge is that water-borne sanitation is an aspiration for the majority of South Africa's citizens, regardless of their context (social, political, economic, environmental, institutional), or the availability of water for water-borne sanitation. Dissatisfaction with anything other than water-borne sanitation has resulted in non-use, vandalism and increasing numbers of social protests, some violent, costing the country millions of dollars in loss of economic productivity and damage to infrastructure. South Africa has experienced a series of service delivery protests in various cities and towns during the last decade. According to a 2010 survey conducted by the Community Law Centre (CLC) at the University of the Western Cape, in the 523 documented community protests that occurred between 2007 and mid-2010, at least 15% of protests complained about the lack of adequate sanitation (Van Vuuren, 2013).

### **Perceptions and values**

Dissatisfaction is typically related to how a situation is perceived. The word 'perception' has become part of everyday language, and the importance of perceptions and their impact upon an individual's decision making behaviour are not disputed any more. Perceptions pertaining to technology use are gaining more credibility as proof is provided by numerous studies and experiences related to technology failure due to user perceptions.

Perceptions influence and guide all behaviour, motivate or discourage all actions, and are the cornerstones of what people would be willing to take responsibility for. People's expectations and aspirations, coupled with their real and perceived needs, are constructed over many years of their lives, and are grounded in their struggle to overcome daily and historic challenges in their efforts to improve their quality of life. Their adoption of a sanitation facility is influenced by their feelings towards it, their perceptions of it and its ability to satisfy their needs and aspirations. Their perceptions may not necessarily correspond with the technology developer's view of what the reality is, because reality is subjective and each person's reality is unique to them, and

is based upon their interpretation of the events and circumstances in which they find themselves, i.e., that reality is the perception of the person perceiving it. Perceptions influence attitude. An attitude is a basic 'mind set,' an outlook, how a person view things. Perceptions and attitudes are very much at the mercy of peer pressure, especially in today's world of social media and the very fast pace of technology development. Perceptions change with changing circumstances, or less/more information, and are formed through feelings, beliefs, mental pictures, gut feel, the accumulation of information over time, individual or shared experiences, and the true or not true reality that applies. Perceptions and attitudes are driven and supported by values. Values can be defined as preferences for certain thoughts or actions or events. Values form the core of culture, they inform what to care about, what to strive for, and how to behave. From values arise other elements, such as etiquette, life-style, language, symbols, attitudes and behaviour (Gardenswartz and Rowe, 1987:13). According to Kriel (1992: 14) and Hoff (1990: 6) the similarity and pattern in the values of the members of the same cultural group are linked to the world view of the members of the cultural group. According to a number of authors over the last 50 years (Forde, 1954; Knudson, 1978; Macnamara, 1980; Kearny, 1984; Hoff, 1990; Mbiti, 1990; Kriel, 1992; Funk, 2001; LeBaron, 2003), the concept "world view" consists of the inherited characteristics, background experiences and life situations, understanding, values, perceptions, attitudes, ideas, assumptions and habits of the members of the same cultural group. Kriel (1992:14) explained that 'world view' is a system of meaningful views and understanding that come from learnt and inherited knowledge, and participative and emotional involvement in the experience and activities of the cultural group in which the individual was born and raised. Ethnic, religious, and community factors play a major role in forming values.

Any intervention, or technology, or action, or development, from outside a specific cultural group, is judged according to the prevailing values, perceptions and responsibilities underwritten by the cultural or social group. It is important to understand and consider the impact of the values of the user on the design, development and implementation of technologies, especially regarding sanitation technology as it impacts so closely with the dignity of each human being.

### **Perceptions of sanitation services**

South Africa's people currently expect to receive water-borne sanitation from the government and regard anything else as being sub-standard, below par, or undignified.

Unconventional sanitation technologies, i.e., non-water-borne, are seen as being foisted upon them by government and services providers without affording them the opportunity to decline or negotiate for something different.

The provision of adequate sanitation in growing urban informal settlements poses a specific sanitation challenge in South Africa. The main challenges are related to the high density of these settlements (no space for any infrastructure other than the shack/dwelling), insecurity of tenure, and complex community dynamics that make it extremely difficult to plan and construct standard sanitation infrastructure solutions in these areas. One example of complex community dynamics is the resilient superstitions or beliefs that sometimes prevent the use of non-water-borne sanitation facilities, such as the urine diversion toilet, owing to the belief that human excreta is easily accessible and could be used to bewitch a person.

Another major factor regarding informal settlements around the urban areas is that local authorities and formal political leadership structures do not recognize informal settlements that are established illegally on servitudes, state land and/or private property. The unlawfulness of settlement and the lack of formal tenure do not allow for residents to progressively realize their right of access to either water or sanitation services (Tapela, 2015), even though living in the vicinity of a progressive urban setting tends to lead to higher expectations and aspirations of the inhabitants about levels of services delivery. Informal tenants and informal settlement dwellers mostly rely on communal chemical or flush toilets located on public spaces on the outskirts of residential areas, some distance away from shacks and dwellings. Residents are compelled to walk distances of more than 100 metres to relieve themselves, even at night (Tapela, 2015). These facilities were generally misused, poorly maintained, and neither the services provider or the users took responsibility for them. But services providers have very little choice or options available in providing sanitation services in the context of these very dense informal (mostly unlawful) settlements with a mixmatch of religions and cultures, where cost recovery is non-existent.

The challenge is to, in a much politicised setting, address this disjuncture between what people believe and aspire to, based on their hopes for a better life, and what is actually possible and affordable.

### **Perceptions and acceptability of sanitation technology**

The general focus in the development of a technology is on the quality and the functioning of the technology, and not on the qualitative background necessary for the

technology to be used. It is generally recognised that technological appropriateness is not an intrinsic quality of any technology, but derived from the surroundings (technological, as well as sociocultural, politico-legal, economic, and environmental) in which the technology is to be utilised and the specific purpose of its application.

However, the fact that a technology works does not mean that the technology is the right one for the goal and the context in mind. Increasingly, people choose a technology because they like it and then try to fit it to their objectives, often because of interest from donors and NGOs in financing and testing new technologies that is more important than the actual applicability of the technology. The technology itself may be working perfectly but does not add any perceived value to the original context.

A number of studies conducted in South Africa have revealed that social aspirations generally drive the acceptance of sanitation technologies by users (Duncker, 2000; Duncker & Matsebe, 2004; Drangert, Duncker, Matsebe & Atukunda, 2006; Duncker, Matsebe & Austin, 2006; Matsebe, 2012). In determining the sanitation service to be provided to households in the country, individuals' wants, expectations, desires and acceptance are considered, but the financial resources and expenditure in establishing and maintaining the service is generally the overriding decision making factor (Wilkinson & Pearce, 2012) for both services providers and users/households.

Effective technology transfer proved to be crucial in achieving the desired impact and sustainability of a technology. The use of a technology is closely linked to the context, but it is difficult to design and develop a technology that could address all contexts. The closest fit to a given context is usually the most appropriate, which includes not only the technical design and development, but also the related social aspects and the role of the technology in a given context.

When users adopt a technology, they consider many factors, such as safety, convenience, cost, status, affordability, and so on. It is not generally possible to make users accept a new technology with each factor being fulfilled completely. Kim (2015) provided the example that accuracy may be crucial in one technology, and security may be crucial in another. Acceptability of a technology is dependent on how it fits into the complex patterns of life of different levels of users. According to Kim (2015), users need to balance utility (the match between user needs and functionality), usability (ability to utilise functionality in practice), likeability (affective evaluation), and cost (both the financial costs and the social and organizational consequences of buying a product).

The suitability, or appropriateness, of a particular technology is defined by the interrelation between a technology and its context; i.e., people in their social,

cultural, economic, institutional, organisational and physical environment, and should be measured against the cultural, political, economic and environmental benefits it provides. The term 'appropriate technology' may also mean "sustainable technology at community level." The concept of technology that is appropriate to its social, economic and environmental context was developed by thinkers such as Mohandas Ghandi, Fritz Schumacher (1973) and Johan van Lengen (quoted in Jequier, 1979) as a response to the problems of poverty, unemployment and inequality experienced by many in developing countries. Appropriate technology was to offer an alternative to large-scale, centralised, expert-controlled and ecologically unsound technologies. In this sense, appropriateness was considered as 'alternative,' meaning technologies that are not yet in general use and that are often seen as driven by environmental or 'green' concerns. Akubue (2000) believed that "an appropriate technology must be progressive and not retrogressive." Appropriate technologies are also described as 'technologies with a human face,' in that they fit the socio-cultural, geographical, economic and environmental context of the settlement in which it is being applied (Schoeman, 2001). Appropriate technology is thus wider than just the hardware - it is the sustainable application or operation of a technology - which could be conventional, intermediate, alternative or innovative - to meet national imperatives within the local social, cultural, ethical, institutional, financial, economic and environmental requirements and constraints experienced by the authority or household responsible for the technology. As South Africa is a signatory to international agreements such as the Agenda 21, the Habitat Agenda, the Kyoto Protocol, the Johannesburg Plan of Implementation, and the Sustainable Development Goals, strong policy support and commitment exist to the wider use of technologies that are environmentally sustainable, appropriate to local conditions, improving quality of life and supportive of sustainable livelihoods.

Appropriate technology also has a gendered face. The roles and responsibilities of women, men and children are closely interlinked with their cultures and the way they grow up, the way they are brought up within their cultural environment and cultural relationships that formed the basis for their perceptions. But culture never stays stagnant, it develops and grows, it is dynamic, it changes and adapts constantly (Ember & Ember, 1988: 18 - 26). In many settlements in South Africa, women and children who are poor may spend as much as one third of their day locating, collecting and transporting water for drinking, agriculture, food production, food preparation and family hygiene, from water sources that are far from fit for use. Many studies have shown differential adoption of technologies between men and women, mainly due to their inherent and cultural gender roles in their communities. In Africa, gender roles

are still unambiguous and followed, especially in rural areas where urbanisation and exposure to different ways of doing things are not as extensive as in urban areas. Many studies showed widespread evidence of women in developing countries not being involved in the planning, design or decision making around water matters and technologies that directly involve them, because decision making is seen as a man's role. More emphasis needs to be placed on technology development that takes into consideration the gender constraints of the users, for example women's access to and control over resources (funds, etc), or their ability and willingness to make decisions within their cultural constraints.

Apart from gender complexities, appropriate technologies have a cultural face. This became apparent in reactions to a type of rural water collection technology in South Africa called the Roundabout Play Pumps. The pump works on the basis of attaching a playground merry-go-round to a water pump, which pumps water when children play on the merry-go-round from a borehole into a storage tank. Users access the water in the tank from a tap and excess water raised by the pump is diverted back into the ground. The pump allows children to spend more time in school and the women to dedicate more time to agriculture or other income producing activities as they are relieved of the task of going to distant streams or water sources to collect water. But, some people questioned the pump's appropriateness because of the high price of installation, whether maintenance can be done locally, and possible social consequences of using a system that encourages children to associate pumping water with "play." The concern was that this 'play' association will undermine efforts to encourage water conservation or teach children to be mindful of the environment (Peterson, 2008).

### **Considering perceptions of users**

In its efforts to reach universal access to at least a basic sanitation facility for all in South Africa, the Free Basic Water and Free Basic Sanitation policies came into effect for people living below an income level of USD150 (called the 'indigent') through an equitable share subsidy to services providers, thus providing at least a tap within 200m of the user and a Ventilated Improved Pit (VIP) toilet. The Free Basic Water and Sanitation policies inevitably negate the demand-driven approach as services providers are opting for the cheapest solution instead of the most appropriate solution. The drive for appropriate technology could furthermore be compromised as all users would demand the highest level of service irrespective of cost-effectiveness

and appropriateness. Although many communities have accepted the level of service provided currently, they have clearly indicated that they perceive the infrastructure and sanitation facility to be an interim measure in ultimately being provided with the highest level of service (Wilkinson and Pearce, 2012), thus water-borne sanitation.

The South African Local Government Association (SALGA) highlighted that experience in South Africa and elsewhere have demonstrated conclusively that sanitation programmes focusing exclusively on toilet facility delivery have limited and short-lived benefits (SALGA, 2008). SALGA made it very clear that user education is essential for any sanitation technology installation, regardless of whether it is urban or rural, on-site or off-site, water borne or dry sanitation. Awareness of the linkages between health, hygiene and sanitation must be emphasised, and users must be provided with information on how to keep their toilet functioning well. Unless users understand the basic requirements for operating and maintaining a hygienic toilet it is likely to malfunction and – particularly for on-site toilets - provide a powerful disincentive to being used. They emphasised that any sanitation intervention needs to be preceded by a comprehensive programme of information provision about the operating costs and requirements of different sanitation systems that targets both decision-makers and end-users of a sanitation intervention. This will enable them to assess the implications and make informed choices and decisions that are appropriate to their needs and circumstances. Where users are engaged actively in assessing their options and making informed decisions, and are given information on how to make their toilets work for them, the result is a lasting improvement in quality of life and well-being (SALGA, 2008). Local leaders and politicians have a decisive role to play shaping debate about realistic approaches to sanitation improvement, and SALGA encourages allowing them to play a more prominent role (SALGA, 2008).

A growing population, and focus on economic growth and development, necessitates ensuring water security and healthy water ecosystems that support national imperatives (DWA, 2013a). A key characteristic of the institutional vision provided by the Strategic Framework for Water Services (DWA, 2003) is that the precise institutional form of water services provision is not specified, but is flexible, with respect to both the scale of provision and the type of service provider. A water services provider could thus be a municipality, a public utility or board (owned by local and/or national government), a community-based organisation or a private organisation that could serve one small rural community, one or more towns, a large metropolitan area, or a whole region consisting of a mix of settlement types.

Technology choice has been largely decided upon by the per capita limits linked to the different funding/revenue streams and subsidies, cost recovery, and the workability of the technology from a technical point of view. Implementing agents, together with engineering consultants, do consider alternative technologies for water and sanitation infrastructure in terms of technical, financial, institutional, social, environmental, operations and maintenance, and legal factors, but the overriding factor remains capital costs. Many case studies and reports show that several water and sanitation schemes are unable to sustain themselves due to a lack of cost recovery from consumers and/or a lack of funding for operation and maintenance of systems. This does not necessarily reflect inappropriateness of technology in a technical sense, but in every other sense it questions whether the choice of technology was appropriate and whether value for money was achieved through good governance.

According to Pillay and Ramsden (2004), good governance is a fundamental right in a democracy and it involves transparency and accountability. Good governance requires an administration that is sensitive and responsive to the needs of the people and is effective in coping with emerging challenges in society by framing and implementing appropriate laws and measures. In the last few years government water services policies and measures have been aligned to support the major focus of water legislation on equitable and sustainable access and use of water by all South Africans while sustaining the country's water resource. The Second National Water Resources Strategy (NWRS2) that came into being states that conventional waterborne sanitation, which uses potable water to wash away human faeces, is not an efficient system in a context where fresh water is scarce and precious (DWA, 2012). It further states that ensuring a sustainable water balance requires a multitude of strategies, including water conservation and water demand management (WCWDM), further utilisation of groundwater, desalination, water re-use, rainwater harvesting and treated acid mine drainage. The water resource protection theme of the strategy emphasises the need to protect the country's fresh water ecosystems, which are under threat because of pollution from many sources, such as poor sanitation.

Re-use of water is becoming more acceptable and feasible because of increasing water shortages, improved purification technology and decreasing treatment costs. The government is aware that direct re-use of treated wastewater may pose a risk to public health and safety, and requires that it must be managed carefully and be subject to water quality management and control. Advanced treatment technologies, sufficient operating capacity and proper monitoring of all processes and quality of potable water produced, is essential regarding re-use of water. The Department of Water and

Sanitation has requested that the performance of wastewater and effluent treatment plants nationwide be improved to meet high standards, to result in consistently good quality discharges to the environment before direct water re-use can be placed on the national water supply agenda (DWA, 2013b).

### **Appropriateness of technology**

The use of a sanitation facility that is appropriate to a particular context or environment in meeting the needs of the users is of utmost significance for its sustainability. The contextual suitability of sanitation facilities needs to be grounded in a deep understanding of user perceptions and desires. Similarly, a clear understanding by citizens of how any given facility works, what it costs, and how it must be managed, maintained, repaired and cleaned is required to ensure viability and sustainability. National government supports the development and dissemination of appropriate and environmentally friendly technology in the provision of affordable and reliable water and sanitation services to all South Africans (DWA, 2012). This should assist water services authorities to examine the full suite of options available before deciding on a particular technology for delivery of water and sanitation

Knowledge and technology transfer to industry and society are playing an increasingly important role in South Africa. However, knowledge and use are two different things. A person might know about a new technology but might not know how to use it and therefore does not adopt the technology. In the adoption of a new technology the users first need to know about the technology. Therefore, the researchers and developers need to be familiar with existing services, programmes and other media for providing information to users. Radio, television, newspapers, or magazines may be important sources of spreading information in some places. Technology needs, and the ability to use technology effectively, should be investigated continuously so that the compilation of the pool of technology reflects the current trends, needs and challenges.

Development experience and literature stress the importance of community participation at various governance levels in decisions about issues that affect them. Tapela (2015) stated that the water service delivery challenge in South Africa has a racial face and a gendered face. Many of those who continue to live with the legacy of a racially-skewed historical political economy are men, women, girls, chronically ill, disabled and young children, who were deprived of allocations of quality water services

infrastructure during colonial and apartheid eras and who continue to grapple with inequality in water services delivery.

Participation, capacity building and training are integral to applying an appropriate technology approach to water and sanitation services delivery for it is here that the application of an appropriate technology perspective meets institutional and social development goals. Reymond, Renglii and Lüthi (2016) explain that stakeholder involvement is the art of including stakeholders in the urban planning process in order to take into account their needs, priorities and interests, to achieve consensus and to remove opposition, thus to participate. It is about defining the participation level of people in the process, from simple information sharing to consultation, collaboration or delegation, and how to best respond to their needs, for example through awareness raising, or training and capacity building. Meaningful participation, capacity building and training serve as the interface between institutional and social development and the concept of appropriate technology in the water sector.

When introducing a new or appropriate technology to the users, there is a need for patience and persistence. Service delivery is facilitated by good relationships between politicians (councillors), technical staff and beneficiaries, and it is important for all stakeholders and role players to cooperate. Trust, especially by the users, in the partnership between the settlement and the implementers, can be created through transparency and the sharing of information on budgets with the project steering committees. Emerging contractors are usually flexible and resourceful with regards to the use of local resources and should be utilised more effectively. Proper operation and maintenance plans are essential to the continued sustainability of sanitation services.

The sanitation sector needs to continue striving towards good governance in order to achieve sustainable services (de la Harpe, undated). Good governance, according to De la Harpe (undated), involves constructive co-operation between the different sectors where the result is responsible use of resources, responsible use of power, and effective and sustainable service provision. Good governance would only be achieved where all stakeholders are engaged and participate in the sanitation sector in an inclusive, transparent and accountable manner to accomplish better services free of corruption and abuse, and within the rule of law (De la Harpe, undated).

## **Conclusion**

South Africa realises that improving accessibility, affordability, and accountability in the use and dignity of sanitation facilities requires not only awareness and responses

from national government, but also integrating industry, academic institutions, health professionals, non-governmental organisations, financing agencies, and the population at large in seeking solutions.

South Africa faces the daunting task of sustaining an effective urban and rural development programme. Residents in settlements have high expectations that can currently not be managed by the delivery systems of South Africa. The challenge is to focus on the capacity building of people (men and women) to sustain increasing productivity, thus reducing poverty. Projects should not be resource-driven but rather demand-driven. With the latter approach, also known as a people-centred approach, problems and needs are identified with the full participation of the community and the community is motivated to participate in all phases of projects, which then fosters a sense of ownership and responsibility. It is the overriding prerequisite for the provision of sustainable and appropriate service delivery, which in turn leads to the development of sustainable human settlements.

Moving beyond conventional approaches towards sustainable sanitation services and clean water needs to be both top-down and bottom-up. Top-down, because it is often the only way to change or improve institutions, laws and regulations; and bottom-up because little can be done without dynamic individuals, communities and private sector stakeholders who have the energy, vision and creativity to champion innovation. Flexibility is needed from government to integrate non-governmental and community initiatives in its planning and to allow these initiatives to become common practices. The Minister of Water and Sanitation emphasised in 2015 that “The principle of ‘nothing about us without us’ should serve as a constant reminder that whatever we do, ... we should do it for the restoration of the dignity of our people.”

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