

**IMPLEMENTING LIVELIHOODS-BASED  
APPROACH  
TO WATER SERVICES AND SANITATION  
DUNCAN VILLAGE PROJECT**

**Report to the Water Research Commission**

**by**

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## **EXECUTIVE SUMMARY**

The Programme for the Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation recognize water resources as a critical factor in sustainable development and in poverty eradication. Agenda 21 and JPOI emphasize the importance of increasing access to safe drinking water, food and sanitation as a central element of poverty reduction efforts.

The significant question with regard to housing and human settlement in South Africa is whether or not development in the field of sustainable human settlement since 1994 has served to further the course of sustainable development, with respect to the inter-linked pillars of environmental, social and economic sustainability.

High levels of poverty among urban communities in SA are linked to high levels of unemployment and a lack of social stability. In many cases there is a lack of access to even the most basic municipal services, limited or no access for the poor to land for housing, and highly destabilized housing environment. Poor environmental quality of these settlements is exacerbated by the lack of basic services.

Most analysis indicate that the “water crisis” is primarily an institutional problem reflecting lack of human resource capital, capacity, finance and political will to manage water resources and provide water services, rather than a water crisis as such.

Water losses and leakages in urban water supply systems remain high in both developed and developing countries. Poor operation or deferred maintenance of the system, budgetary constraints, lack of cost-recovery mechanisms, weak governance, and deficient institutional frameworks remain leading causes for the poor performance of water supply systems. Considerable potential exists to

reduce these losses through improved maintenance, better financing through cost-recovery, improved governance and management of utilities, and public awareness campaigns.

Due to the increasing financial and environmental costs of developing new sources of water, it is generally more cost-effective to increase the effective water supply by reducing leakage and losses.

Lack of finance and institutional failure, exacerbated by increasing demand for water, have encouraged many countries including SA to embark on reforms of their water sectors. The main thrust of these reforms has been to ensure better coordination in the water sector and encourage participation by major stakeholders. The results have been mixed. In some cases, decentralized management of water resources and services has yielded good results. However, failure of a large number of water supply projects indicates the need for local decision-making in the choice of technology and better coordination.

Successful policy and institutional reforms have led to better water allocations, financing and management in some countries. While there is much diversity in these institutional and policy changes, similarities include the increasing importance attached to market-based allocation, stakeholder involvement, private sector participation, integrated water resources management, and economic and physical sustainability of water supply and sanitation systems.

The role of small-scale water and sanitation providers (SSWaSP) in supplying water services can be quite substantial but has not been well experimented in SA. The SSWaSP market is in general quite competitive in terms of delivering services. The higher prices normally charged by SSWaSP than by water and sanitation utilities can reflect a combination of factors: loss of economies of scale, subsidies for piped water, greater flexibility and convenience (e.g. no connection charges), and in some cases a local monopoly on a bulk water source. Still, as

long as publicly or privately owned water and sanitation utilities bypass wide swathes of human settlements – notably urban informal settlements, the SSWaSPs will continue to fill an important need.

In Duncan Village, poor sanitation, together with pollution, are not just common in the township, but have become part of life. This has and will continue to threaten the lives of the local residents and biodiversity down-stream. Poor sanitation is further compounded by the constant wet conditions resulting from broken water pipes and blocked drainage pipes.

The issues of sanitation in the township are further complicated as ablution facilities are used separately among men and women. This gets compounded by the fact that either men or women will not understand the magnitude of the problem in its totality. While women think that their situation is worse compared to that of men, men will be thinking similarly. While men expect women to assist in cleaning the facility, women expect men to unblock the pipes and drains. However, since the two groups never come together in terms of use of such facilities, and since the groups never experience the same problems at any given time, they hardly talk about their common problems. Neither do they inform each other about the expectations.

The project was initiated with the following objectives:

- identifying the root causes of water and sanitation services problems in Duncan Village
- the history of segregated usage of ablution facilities in the township
- status of services in the township – including the photos
- roles played by stakeholders towards ensuring better environment
- analysis of the problems
- providing recommendations based on the practical experiences and current problems

Section C of Duncan Village has an estimated 17 000 people. The majority of these people are unemployed and have no stable income. This population is sharing about 140 clustered toilets, an equivalent of 120 persons per toilet.

The problem is further compounded by the fact that refuse collection is not consistent, leading to a situation where the very limited toilets are used as dump sites. Vandalism on infrastructure is also a major factor. This leads to water spills all over the place, thus creating environment that is conducive to mosquitoes and diseases.

Residents wash their clothes near the toilets where wash troughs are provided. Since drains are blocked most of the time, this leading to water ponds in the vicinity of the toilets. Wet conditions and the flowing water spread the problem into the nearby houses, thus exposing many residents to dangers of getting sick.

Residents do not pay for services. In fact, they do not believe that there is a need for payment as they regard it as free basic service provision, which is the responsibility of the government. According to some residents, however, due to non-payment, people are irresponsible both in terms of looking after the service provision facilities and reporting any broken pipes or blocked drains.

There is correlation between the dilapidating situation in Duncan Village and the types of diseases that are encountered among the residents.

Multi-stakeholder workshops indicated that community members should be involved in the maintenance of services in the area in order to be more responsible. Due to over-population and dense settlement, it is impossible to clean the area to the satisfaction of the residents. Residents, however, would prefer a situation where refuse is collected every day.

In recommendation, residents must be encouraged, after capacity building, to pay for water services. This should be coupled with the establishment of local small scale service providers who will repair broken pipes and collect refuse. This, however, necessitates demand management strategies that include estimating potential water savings by conducting cost benefit analysis.

Service delivery must be monitored carefully. A committee is recommended, to be constituted by both local authority and residents representatives, to monitor and advise both parties on issues that pertain to the conditions and activities within the township.

It is imperative for both the Buffalo City local authority and community leadership to raise funds that will enable capacity building and training of residents, including skills development, both technical and entrepreneurial skills.

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## **1. Introduction**

Agenda 21, the Programme for the Further Implementation of Agenda 21 and the WSSD's Johannesburg Plan of Implementation (JPOI) recognize water resource as a critical factor in sustainable development. In recent years, however, there has been growing concern over a "global water crisis" resulting from increasing demand for finite water resources, contamination of water supplies, and degradation of ecosystems due to mismanagement of water. Underlying these factors are continuing population growth, urbanization, industrialization and intensification of agriculture. It is recognized that water will be a critical factor in development strategies for the future, particularly in growing number of areas where water resources are already scarce relative to the population.

Agenda 21 and the Johannesburg Plan of Implementation emphasize the importance of increasing access to safe drinking water and sanitation as a central element of poverty reduction efforts.

## **2. Human settlements**

The most significant question today with regard to housing and human settlement in South Africa is whether or not development in the field of sustainable human settlement since 1994 has served to further the course of sustainable development, with respect to the inter-linked pillars of environmental, social and economic sustainability.

Informal settlement development is fuelled by a combination of rapid rural-to-urban migration, spiraling urban poverty, the inability of the urban poor to access affordable land for housing and insecure land tenure. Informal settlements are largely a physical manifestation of urban poverty, a fact that has not always been recognized by past policies aimed either at the physical eradication or the

upgrading of slums. For this reason, future policies must go beyond the physical dimension of slums by addressing the problems that underlie urban poverty.

The state of human settlements in South Africa as far back as 1992 was such that colonial and apartheid planning had left an extremely negative legacy in the settlements of South Africa. High levels of poverty among urban communities were linked to high levels of unemployment and a lack of social stability. In many cases there was a lack of access to even the most basic municipal services, limited or no access for the poor to land for housing, and highly destabilized housing environment. Poor environmental quality of these settlements was exacerbated by the lack of basic services. There was, and still is, an extreme shortage of affordable housing for the poor in South Africa.

The above factors and many more had resulted in a situation where South Africa human settlements were characterized by spatial separation of residential areas according to class and population groups, accompanied by desperate levels of service provision, urban sprawl, low levels of service provision, low levels of suburban population density, and the concentration of the poor in relatively high density areas on the urban peripheries, which were often environmentally inhospitable.

### **3. Water services and informal settlements**

Most analysis indicate that the “water crisis” is primarily an institutional problem reflecting lack of capacity, finance and political will to manage water resources and provide water services, rather than a water crisis as such. Knowledge, skills and technology exist for managing water resources and providing water services for all in support of sustainable development.

The proportion of the urban population in developing countries reported to have access to an improved water source was 92% in 2000. “Improved” refers to a

household connection, public standpipe, borehole, protected dug well, protected spring, or rainwater collection. Excluded are unprotected wells and springs, vendor-provided water, and tanker truck water. The percentage seems impressive when set against the estimated 924 million people living in slums, roughly one-third of the world's urban population in 2000. It suggests that a high proportion of slum dwellers do have access to an improved water source.

Informal settlements around cities and small towns in South Africa are on the increase. This is due to a number of factors, such as poverty and relatively slow development, leading to urbanization.

Usually, informal settlements lack basic infrastructure such as toilets, electricity, roads and clean water. This is because informal settlement development is not planned properly. Limited basic infrastructure associated with informal settlements has negative impact on the lives and social behavior of the residents.

The majority of the people in informal settlements are unemployed and generally poor, and unlikely to afford payments for basic services, such as electricity, water and proper sanitation. As a result, authorities will tend to provide very basic and usually sub-optimal levels of services as the costs of such services are not recoverable. Another complication is the fact that population density in informal settlements is very high, and changing over time, making it more difficult to provide adequate basic needs.

According to the UN Economic and Social Council (2004), contaminated water sources, inadequate maintenance of pumps and distribution systems, and leakage of water from pipes are problems that need to be overcome. Some countries are improving the financing of water supply through increased cost recovery from those who can afford to pay, with subsidies for those who cannot. Public-private partnerships for urban water supply are being explored with mixed

results. However, there is no universal option for communities that vandalize infrastructure once it is in place.

While the data available for trends in drinking water supply worldwide are for improved sources, safe drinking water also depends on the quality of the water at source. Contamination of water sources by human or animal waste, industrial waste, or natural toxic elements such as arsenic can render water unsafe for drinking even though it comes from an improved source.

Water losses and leakages in urban water supply systems remain high in both developed and developing countries. Poor operation or deferred maintenance of the system, budgetary constraints, lack of cost-recovery mechanisms, weak governance, and deficient institutional frameworks remain leading causes for the poor performance of water supply systems. Considerable potential exists to reduce these losses through improved maintenance, better financing through cost-recovery, improved governance and management of utilities, and public awareness campaigns.

#### **4. Obstacles on reaching Millennium Declaration Goals (MDGs)**

Frequently noted obstacles to the implementation of internationally agreed targets are inadequate financing, deficient cost-recovery policies, fragmented institutional structures, inadequate economic mechanisms in water sector management, environmental and ecological problems from lack of human settlement planning, and limited public awareness. In the case of Africa, these constraints are further compounded by higher water development and distribution costs and weak technical and institutional capacities.

Due to the increasing financial and environmental costs of developing new sources of water, it is generally more cost-effective to increase the effective water supply by reducing leakage and losses.

Globally, contaminated water is still responsible for approximately 7% of all deaths and diseases, with 3 – 4 million people dying each year of waterborne diseases. Diarrhea alone is responsible for 7.7% deaths in Africa. Worldwide considerable progress has been made in reducing the toll of diarrheal deaths, particularly among children, due to improvements in drinking water, sanitation, hygiene and medical treatment.

While the industrial world has made huge investments in controlling wastewater discharge, 90% of wastewater in the developing world still goes untreated into local rivers and streams. In peri-urban areas in developing regions, untreated municipal sewerage and wastewater is often used for small-scale irrigation, especially for growing vegetables that thrive on sewage, but this poses serious threats to human health.

Lack of finance and institutional failure, exacerbated by increasing demand for water, have encouraged many countries to embark on reforms of their water sectors. The main thrust of these reforms has been to ensure better coordination in the water sector and encourage participation by major stakeholders. The results have been mixed. In some cases, decentralized management of water resources and services has yielded good results. However, failure of a large number of water supply projects indicates the need for local decision-making in the choice of technology and better coordination.

## **5. Policy interventions**

Successful policy and institutional reforms have led to better water allocations, financing and management in some countries. In Mexico, legal and policy changes have laid strong foundations for building stronger water sector institutions. The main thrust of Brazil's policy reforms has been formulation and implementation of region- and sector-specific strategies, including the establishment of a water resources management authority. While there is much

diversity in these institutional and policy changes, similarities include the increasing importance attached to market-based allocation, stakeholder involvement, private sector participation, integrated water resources management, and economic and physical sustainability of water supply systems.

According to Commission on Sustainable Development (12) reports (2004), rapid urban population growth over the coming decade means that there will be a continued need for sizeable investment in urban water infrastructure. A major issue in the management and development of drinking water supply systems in recent years has concerned the role of the private sector and public-private partnerships. Private sector participation in drinking water supply can be considered in two broad classes. The first involves large private companies while the second involves small-scale water providers engaged primarily in the provision of service and making only limited investments.

The participation of stakeholders, and especially of excluded groups, in city decision-making has emerged as one essential element in poverty reduction. Once the needs, aspirations and priorities of excluded groups – as expressed by themselves – are given acknowledgement in city administration, then the process of serious poverty reduction can begin. A defining attribute of good urban governance is participation, and thus, as the challenge of urban poverty reduction has been increasingly acknowledged by decision makers and opinion leaders, so the focus on urban governance has also increased.

In addition to governance, another major characteristic of the ongoing global realignment of responsibilities of government is decentralization to local authorities. For some time there was a powerful body of opinion that argued that decentralization in and of itself would improve government. There is now an increasing recognition that decentralization to local authorities is alone not enough to ensure improved service provision and poverty reduction. Decentralization is a necessary but not sufficient condition for improvement in

urban conditions. Although it is increasingly recognized that central government instrumentalities are often too remote and unresponsive to be effective service providers, it does not follow that city governments are any better. Many are dominated by petty politics, corruption and bureaucratic mindsets. The explicit adoption of a good governance agenda can address a large number of these issues.

## **6. Involvement of local small-scale service providers**

The role of small-scale water providers (SSWP) in supplying water services can be quite substantial but has not been well documented. A survey in six African cities, eight Asian ones and six in Latin America and the Caribbean finds the following arrangements: SSWP partnership with the water utility; SSWPs providing water from their own sources to neighborhoods not covered by utilities; entrepreneurs who build their own systems connected to the utility mains; owners/operators/franchisers of public toilets and bathing facilities; water kiosk and standpipe operators, who are the most common providers to the urban poor. The SSWP market is in general quite competitive in terms of delivering services. The higher prices normally charged by SSWP than by water utilities can reflect a combination of factors: loss of economies of scale, subsidies for piped water, greater flexibility and convenience (e.g. no connection charges), and in some cases a local monopoly on a bulk water source. In some cases, it may be a public water utility that exercises that monopoly, earning a higher return – albeit on a smaller volume – from selling water to SSWP than from delivering it through the piped network. On occasion, this can give rise to abuse, e.g. when intermittent service interruptions force even network customers to buy from SSWPs. Still, as long as publicly or privately owned water utilities bypass wide swathes of human settlements – notably urban informal settlements, the SSWPs will continue to fill an important need.

Considerable progress worldwide has been made over the last decade in terms of institutional building and the development of policy and regulatory frameworks for water services management, also in strengthening capacities of local enterprises and communities in different aspects of water service provision. Elsewhere, good results have been achieved in human resources development and the transfer of technical skills, but there has been limited success in creating sustainable organizations and institutions.

Water sector institutions generally remain weak and under-funded, although they have developed during the last decade in terms of their capacities to contribute to water legislation, water policy, and water administration. While past achievements were associated mainly with investment in new physical structures, recent developments in the water sector are associated with improved management and institutional changes. A common problem in implementing institutional reform is that the water sector is large and diverse and responsibility for it is fragmented, or at least divided amongst several agencies.

The sustainability of capacity building activities in developing countries remains a major source of concern due to lack of adequate funding and political commitment. Collection of information and data for water management is often dependent on project activities, which once completed, data collection activities are abandoned.

The continuing challenges identified by the Commission for Sustainable Development are as follows:

- providing access to safe drinking water

Increasing access to safe drinking water and sanitation is imperative to help prevent the large number of deaths and illnesses each year attributable to water-related diseases, to reduce poverty, and to achieve sustainable



development. The most critical issues that need to be addressed to meet this challenge include: better targeting of subsidies to ensure that the very poor are the prime beneficiaries and to reduce the fiscal burden; devising tariff structures - e.g. lifeline rates – that ensure universal affordability of at least the minimum quantities needed to support life and health; mobilizing the resources and expansion of infrastructure with more focus on rural and peri-urban areas and with an emphasis on low cost technologies; rehabilitation of existing water systems; and promoting private sector participation and investment in the provision of affordable services. Access will have to be sustained through improved local governance and regular organic and maintenance of the systems.

- maximizing economic and social benefits from available water resources

Increasing water productivity in all sectors and allocation of scarce water taking into account its value in different uses is an important challenge for promoting sustainable development. Experience suggests the need for greater cost recovery in water pricing, supported by improved water administration and governance mechanisms.

- improving water quality

In developing countries, water pollution from household/informal settlements wastewater is on the rise, posing serious threats to human health, ecosystems, and economic activity. Concerns over the costs to industry of pollution control often take precedence over the internalization of the social costs of pollution.

- mobilizing financial resources

Financial resources are a major impediment to achieving the water and sanitation targets. The main obstacles to mobilizing resources are inadequate domestic resource mobilization policies and lack of private sector investment.

- strengthening institutional and technical capacities

Experience suggests that sustained capacity building efforts will be critical to achieve the internationally agreed targets of the World Summit on Sustainable Development. Also, the best-designed water management policies and programmes fail when implementation and enforcement capacities are weak. Apart from technical training, for example in water supply system operation and maintenance, training would be useful in the design of effective incentive mechanisms to encourage enforcement of water pollution laws and regulations.

## **7. Objectives of the project**

The project was initiated with the following objectives:

- identifying the root causes of water and sanitation services problems in Duncan Village
- the history of segregated usage of ablution facilities in the township
- status of services in the township
- roles played by stakeholders towards ensuring better environment
- analysis of the problems
- providing recommendations based on the practical experiences and current problems

Information generated was going to inform future interventions aimed at addressing the problem comprehensively. This could also be used as a yardstick to wards tackling water and sanitation service problems associated with informal settlements elsewhere in South Africa.

## **8. Water and sanitation services situation in Duncan Village**

Although the causes of sanitation problems at Duncan Village informal settlement are usually known, it is only the symptoms of such problems that the residents tend to think about. This is also usually the case in a number of informal settlements and poor communities. In most cases, the poor will attempt to address the symptoms instead of dealing with the causes of the problems.

In Duncan Village, poor sanitation, together with pollution, are not just common in the township, but have become part of life. This has and will continue to threaten the lives of the local residents and biodiversity down-stream. Poor sanitation is further compounded by the constant wet conditions resulting from broken water pipes and blocked drainage pipes.

The issues of sanitation in the township are further complicated as ablution facilities are used separately by men and women. This is compounded by the fact that both men or women do not understand the magnitude of the problem in its totality. While women think that their situation is worse compared to that of men, men think similarly. Traditionally, while men expect women to assist in cleaning the facility, women expect men to unblock the pipes and drains. However, since the two groups never come together in terms of use of such facilities, and since the groups never experience the same problems at any given time, they hardly talk about their common problems. Neither do they inform each other about the expectations.

A densely populated area, Section C of Duncan Village, has an estimated 17 000 people. The majority of these people are unemployed and have no stable income. This population is sharing about 140 clustered toilets, an equivalent of 120 persons per toilet. This ratio of people per toilet is high, considering that more than 95% of those toilets are out of order at any given time.

The problem is further exacerbated by the fact that refuse collection is not consistent, leading to a situation where the very limited toilets are used as dump sites. Vandalism on infrastructure is also a major factor. This leads to water spills all over the place, thus creating an environment that is conducive to mosquitoes and diseases.

Residents wash their clothes near the toilets where wash troughs are provided. Usually, drains are blocked most of the time, leading to water ponds in the vicinity of the toilets. This has led to unsightly conditions in the area, making it difficult for the residents to use the facilities. Also, the wet conditions and the flowing water spread the problem into the nearby houses, thus exposing many people to the dangers of getting sick.

## **9. Service provision**

According to the local councilors, toilets are supposed to be cleaned every week-end by local municipality. This, however, could not be confirmed by the residents of Duncan Village. According to the local residents, there was no specific time that toilets are cleaned. Usually, only one visit per fortnight by local municipality workers occurred. According to the residents, even if this happened, there was no way that the entire section of the village was covered on a single day.

Broken pipes and blocked drains are the responsibility of the local authority. The local authority usually does not check the status of pipes, until the broken pipes are reported by the residents. It is, however, interesting that residents claim that

even if broken pipes are reported, it takes a very long time for the local authority to fix the pipes.

## **10. Payment for services**

Residents do not pay for services. In fact, they do not believe that there is a need for payment as they regard it as free basic service provision, which is the responsibility of the government. However, according to some residents, due to non-payment, residents have become irresponsible both in terms of looking after the service provision facilities and reporting any broken pipes or blocked drains.

## **11. Interviews**

### **11.1 Local residents**

During five separate visits to the area and interviews of residents only, the following issues were raised:

- There is overpopulation in Duncan Village
- There is lack of responsibility among residents
- Residents are not using proper toilet papers in the toilets, because they are “poor”
- Residents would prefer to have a house with private toilet so that people could develop a sense of responsibility
- Children and women get sick due to unhealthy conditions
- Refuse should be collected everyday
- Pre-paid water system is not good for poor people although it leads to water saving

## **11.2 Department of Water Affairs and Forestry**

In a separate interview with the local office of the Department of Water Affairs and Forestry, it was made clear that DWAF was only responsible for water as a natural resource and its protection through policy, but not the services aspects although the department was overall responsible for the water management.

## **11.3 Local councilors**

Local councilors believe that relocating some residents is a solution. This, they believe, will lead to fewer people in the area and provide enough space for better houses that will have separate private toilets. Councilors think that community members must also be trained in maintenance services and health aspects. It was also suggested that private sector should be involved.

## **11.4 Health personnel**

Health personnel believe that there is correlation between the dilapidating situation in Duncan Village and the types of diseases that are encountered among the residents. According to health personnel, sporadic visits are made, about 12 times a month for general inspections. Health officials are concerned, however, about vandalism and improper services in the area. They believe that community members should be involved in the maintenance of services.

## **11.5 Engineering personnel of the local authority**

The area is visited only when there is a major problem. The engineers are aware of vandalism of the sewerage works. They further suggest that community members must be educated about maintenance and on how to use facilities. The relationship between residents and service providers must be improved so that it leads to co-operation. Lastly, engineers believe that pollution problem is a health

risk as polluted streams can lead to cholera particularly on children who play and stay under these conditions.

## **12. Multi-stakeholder workshop**

Several stakeholder workshops were held with the aim of addressing the problems in the township. Residents indicated their opinions on the situation and the possible solutions to their own problems. During the multi-stakeholder (residents, local municipality and local leadership) workshop, the following issues were raised:

- Community members should be involved in the maintenance of services in the area and be more responsible. This could be achieved if residents were allocated tenders to operate in the area.
- Residents are irresponsible, as they allow their children to vandalize the facilities and receive cover from their own parents.
- Over-population leads to dense settlements. This makes it impossible to clean the area to the satisfaction of the residents. Residents prefer a situation where refuse will be collected every day.
- It was suggested that cleaning of toilets should be done by the community members.
- Residents agreed that if someone is caught doing something wrong the punishment will take place on site by community members.
- Plastic taps should be installed instead of copper material since people break the copper taps in order to re-sell it.
- Local municipality should supervise the workers and do follow-ups as the workers do not do their work properly when they collect refuse. It is alleged that workers do not collect refuse if plastic bags burst during collection, instead the refuse is left scattered on the streets.
- Toilets must be cleaned by local municipality workers every weekend.

- Municipality must organize health education on an on-going basis for the residents.
- There must be co-operation within community members about maintenance of services.
- Toilet pipes should be bigger.
- Toilets should have cement around them (seat and cistern) in order to prevent breakages.
- The number of toilets and their location should be increased.
- Some people in Toilet City (new settlement) use their houses for rental and worsen the problem of over-population in Section-C.

### **13. Analysis and conclusions**

The problem in Duncan Village is deep-rooted. It is an old problem that stems from the past skewed government policies. The situation in Duncan Village, just like elsewhere in the world, cannot be reversed without creating further problems. Whether the problem in Duncan Village can be solved completely is a further challenge as families are getting larger, further worsening population density.

It is a fact that most residents are poor. Poverty is and should not, however, become a prerequisite for vandalism. Meeting the water and sanitation needs will require an integrated holistic approach to water resource and water service management. The overall aim should be to empower the poor through capacity building and ensure that they have continuous access to such essential services.

Residents must be encouraged, after capacity building, to pay for water services. This should be coupled with the establishment of local small scale service providers who will repair broken pipes and collect refuse. This, however, necessitates demand management strategies that include estimating potential water savings by conducting cost benefit analysis. In many towns and cities in developing countries, just like in Duncan Village, up to 50% of the water is being



wasted through leakage and illegal connections. This can be controlled through capacity building, technical or regulatory measures including pricing policy for this segment of society.

In establishing pricing policy and working with the private sector, there is a strong case to be made for innovative public-private partnerships that will encourage increased investment in projects aimed at the poor, something that most SA large companies and banks often think are unbankable or difficult to implement. This includes using small-scale providers to overcome the inadequacy of public provision of public services.

There are many examples that show that water and sanitation can be delivered at minimal cost to informal settlement dwellers, namely:

**Bamako:** while only 18 000 households are served by the city water agency, 92 000 households are now served by independent providers.

**Gabon:** revenue from electricity provision in the capital enables cross-subsidization for supplying water to some area.

**Guatemala:** over 200 independent operations are responsible for service provision to over half of the city population.

**Orangi:** over one million residents were provided with clean water and toilets at well below the market rate because of community participation

In smaller less prosperous local municipalities such as Buffalo City, as well as municipalities that incorporate secondary cities, there is a lack of capacity to undertake the expanded developmental role expected of them with regard to settlement management. This is not simply a lack of capacity in terms of

manpower but also in terms of expertise in executing the development responsibilities handed down from the other spheres of government.

A management challenge facing small local municipalities in SA is the difficulties experienced, particularly in small local government in generating their own revenue. A contributing factor to this is a culture of non-payment that developed in townships during the rate boycotts of the 1970's.

Another problem is the lack of direction with regards to the tools required for settlement management. Integrated Development Plans are not settlement management tools in themselves, though they do have a spatial component.

There is a need for Buffalo City local authority to initiate partnership with community based organizations and non-governmental organizations in order to harness external expertise, experience and assistance, with the aim of stimulating local economic development. Success in public-private partnership has varied from local municipality to local municipality and from project to project. Though in general, the success of such initiatives has provided a co-operative solution to specific development problems.

#### **14. Recommendations**

Poverty is singled out as an over-riding challenge for better conditions in Duncan Village. Human activities are having an increasing impact on the integrity of ecosystems that provide resources and services for human well-being and economic activities. A healthy and productive community and the goals of sustainable development can only be achieved in the absence of debilitating diseases. The need to urgently address human capital capacity, ill health including environmental causes of illness and their impact on development are strongly asserted. It is responsibility of the local authority to ensure that this occurs.

There is a need for stability and more sustainable human settlements. This entails a policy shift from the quantity of housing units provided, to the quality of housing units provided as well. Accessibility and inaccessibility of land for housing should be reviewed, as well as security of tenure. Duncan Village residents themselves should be aware that if there is “all access”, it will impact on the service delivery and prosperity. New residents, population growth and vandalism can only be addressed by the residents through local institutional structures and awareness campaigns.

Service delivery by the local authority must be monitored carefully. A committee is recommended, to be constituted by both local authority and residents leadership/representatives, to monitor and advise both parties on issues that pertain to the conditions and activities within the township.

It is imperative for the Buffalo City local authority together with community leadership to raise funds that will enable capacity building and training of residents, including skills development, both technical and entrepreneurial skills. Local business must be targeted, with a clear plan of action and goals of the initiative.

The history behind the “birth of Duncan Village” must be developed and documented for possible use as a tourist attraction, in order to generate funds for supplementing service provision in the township. This should also be supplemented by other activities such as sports, performing arts and music societies, to develop and market skills that local people possess. Initially, all these will not need additional funding or infrastructure other than the community halls that exist already.

Residents must be educated about health hazards associated with compromised environment, particularly on children and women. Local community leadership must be made aware of their responsibility in terms of ensuring a coherent

community that does not degrade itself. If possible, capacity building training must be provided to the leadership prior to exposing the residents.

Food production in the township must be avoided, particularly leafy and tuber crops. These crops, if produced on the backyards, are likely to get contaminated, thus increasing the risk of diseases.

As an immediate step, local residents must identify and group themselves so as to supplement the activities of the local authority. This may include sweeping the streets and providing manpower if major repairs are undertaken. In fact, this is the only way small-scale service provision can be initiated as people will be able to identify niches and opportunities.

It is a fact that there are enormous challenges to develop settlements in ways that allow residents to create livelihoods, access social services, and enjoy a supportive environment. Sustainable development requires complementary and integrated approaches that are cross-sectoral. The development of innovative partnerships will enormously contribute to sustainable development of Duncan Village.

Broadly, the main challenges to the achievement of sustainable urbanization include:

- The potential conflicts between economic growth and environmental sustainability: ways must be found to achieve pro-poor economic development but also to reduce the environmental impact of economic growth and urban production both on towns and cities themselves, and on the global environment. It will be increasingly necessary to find better ways of balancing the needs and pressures of urban growth and change with the opportunities and constraints of the local environmental resource base.

- Urban economic development is often threatened by changes in national and global economies. Even when economic growth occurs, it does not necessarily benefit the poor. Ways must be found of developing urban economies that are diverse, resilient and also provide livelihood opportunities accessible to the poor.
- Urbanization is associated with social and political changes, which can undermine traditional social networks and result in increased inequity and exclusion. Ways must be found of increasing equity and ensuring political and social inclusion.
- Infrastructure is often severely deficient, adversely affecting the natural and built environments and exacerbating poverty because of its effects on the health and living environments of the poor. Ways must be found of extending infrastructure provision to keep pace with urban growth on a basis which is financially and environmentally sustainable, while ensuring access to an adequate level of services for the poor.
- The governance capabilities of the agencies responsible for achieving sustainable urbanization are inadequate. Ways must be found of enhancing their capacity to deal with the challenges of managing growing towns and cities, in the context of their surrounding regions.

Priorities for effective responses to the challenges of poor sanitation and informal settlements include:

- Developing the capabilities (education, skills and health) of the urban labour force, so that residents, especially poor men and women and young people, can achieve secure livelihoods and economic enterprises that can offer decent jobs and recruit suitable workforces.

- The potential for creating sustainable livelihoods for the youth and women, through meeting the demand for more and better houses and improving basic services, must be realized.
- Improving the provision of basic utilities (water, sanitation, energy, waste management) to employees and residents, especially the poor, by drawing on and learning from recent experiences of public sector reform and the engagement of non-governmental actors, including households, communities, and small and large private sector, especially to balance the need for full cost-recovery and the requirement to provide subsidies to the urban poor in order not to further marginalize already disadvantaged groups.
- Poor men and women face unequal access, management and decision-making over water resources and sanitation options. This calls for serious efforts to enhance gender mainstreaming in service provision processes, including financing and viable technical options, as well as institutional and management arrangements.
- Reducing the environmental impact of waste generation by increasing recycling and re-use of by-products, improved solid waste management and sanitation arrangements.
- Recognizing the value of reserving areas of undeveloped land in peri-urban areas, where appropriate, for agricultural, ecological and recreational purposes and strengthening development regulation and support systems to identify, safeguard and productively use such areas.
- Strengthening local governments by ensuring that they have the appropriate powers, resources and capabilities to take responsibility for a range of planning, infrastructure installation, service delivery and regulatory functions.

- Increasing social justice and inclusion by measures to increase the security of poor people, through their access to varied livelihood opportunities, secure tenure and basic affordable services and through multifaceted initiatives to reduce crime and violence.
- Importance of addressing the issue of information flow on poverty in slums and informal settlements.

Informal settlement policies should be integrated with broader, people-focused urban poverty reduction policies that deal with the varied aspects of poverty, including employment and incomes, shelter, food, health, education and access to basic urban infrastructure and services. Improving incomes and job opportunities for slum dwellers, however, requires robust national economic growth, which is itself dependent upon effective and equitable national and international economic policies, including trade. Current evidence suggests that globalization in its present form has not always worked in favour of developing countries and the urban poor, and has exacerbated their social and economic exclusion in some countries.

There is, however, evidence that innovative solutions developed by the urban poor to improve their own living environments can achieve results. Residents become more socially cohesive when appropriate upgrading policies are put in place. Such approaches offer opportunities for more secure tenure, local economic development and improvement of livelihoods and incomes for the urban poor. They can transform the settlements in which urban poor struggle to survive from filthy ramshackle housing developments characterized by disease and insecurity to upgraded, well-maintained homes, where families and communities can thrive. This transformation from slums of despair to slums of hope is not only conceivable given the right policies and approaches, but highly achievable.

## **15. References**

1. United Nations Report: Overview of progress towards sustainable development: a review of the implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation, 2004.
2. United Nations Report, 2004. Human settlements. Progress in meeting the goals, targets and commitments of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation.
3. United Nations Report, 2004. Report of the African Regional Implementation Review Meeting to the twelfth session of the Commission on Sustainable Development on water, sanitation and human settlements. United Nations Report, 2004. Regional Implementation Meeting on water, sanitation and human settlements for Asia and the Pacific.



## **Appendix – Photos: Water and Sanitation in Duncan Village**

(Additional pictures of Water and Sanitation in Duncan Village are filed at the Water Research Commission)

Fig. 1 Refuse next to houses



Fig. 2 Toilets blocked, pipes worn out and walls cracked





Fig. 3 Sceptic Scabies due to unhealthy conditions



Fig. 4 Drain with plastics and faeces



Fig. 5 Blocked toilets with no privacy



Fig. 6 Sullage





Fig.7 Polluted stream



Fig. 8 Polluted stream

