

**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF FINANCE AND ECONOMIC AFFAIRS**



MILLENNIUM CHALLENGE ACCOUNT - TANZANIA

CONSTRUCTION OF TREATED WATER PIPELINE

Environmental Impact Assessment

NON-TECHNICAL EXECUTIVE SUMMARY

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NON-TECHNICAL EXECUTIVE SUMMARY

ENVIRONMENTAL IMPACT ASSESSMENT OF THE PROPOSED CONSTRUCTION OF TREATED WATER PIPELINE

1 INTRODUCTION

The Government of the United Republic of Tanzania intends to expand the Lower Ruvu water supply system in order to improve supply to Dar es Salaam and surrounding areas. This involves (i) increasing the existing Lower Ruvu Water Treatment Plant (LR WTP) production capacity from 180 to 270 million litres per day (MLD), and (ii) increasing the carrying capacity of the 56 km pipeline between LR WTP and the main tanks near the University in Dar es Salaam. The LR WTP expansion is financed by the **Millennium Challenge Corporation** through the **Millennium Challenge Account Tanzania** (MCA-T). A separate EIA was prepared and approved for the water treatment plant expansion works.

Environmental management legislation in Tanzania requires developers to undertake an Environmental Impact Assessment (EIA) before projects are implemented. This EIA study was undertaken to comply with this requirement. The proponent is Dar es Salaam Water and Sewerage Authority (DAWASA).

The report addresses the environmental and social impacts related to the construction of the treated water pipeline. The study provides an analysis of the implications of the pipeline construction activities on the social and bio-physical environment. The study also provides mitigation measures to prevent or minimize any adverse impacts.

The EIA study was done in accordance with the *Environmental Impact Assessment and Audit Regulations of 2005* and *MCC Environmental Guidelines (2006)*. Following these policies and regulations of the **Government of the United Republic Tanzania**, the baseline environmental and social environment has been determined, and the anticipated environmental and social impacts identified. Impact identification checklists, surveys and stakeholder identification and consultation tools were used to gather information on impacts and mitigation measures. The study was undertaken during August-September 2010.

2 PROJECT DESCRIPTION

The existing pipeline was constructed in the mid 1970s. The current water demand exceeds supply by the considerable margin of approximately 200 MLD. DAWASA's long term plans involve expanding the LR WTP to its ultimate capacity of 360 MLD, and the proposed pipeline will be sized to accommodate this flow. In the immediate term, the additional volume of water made available by expanding the LR WTP and constructing the new pipeline, will not only provide drinking water to a greater number of consumers, but will encourage investment, and will improve health and the overall standard of living, all in accordance with the government's poverty alleviation strategy.

The project involves the construction of a second pipeline between the LR WTP and University Terminal Reservoirs in Dar es Salaam. In general, the proposed pipeline will run parallel to the existing DN 1350 pre-stressed concrete pipeline which is approximately 56 km long. The proposed pipeline will pass through sections of Bagamoyo District and Kinondoni Municipal Council.

The preliminary design indicates that the pipeline diameter will be approximately DN 1400. For a pipe of this size, the most likely material of construction is high grade steel with a suitable protective coating and lining against corrosion.

Specifically the proposed works will include:

- Construction of approximately 56 km of underground DN 1400 pipe and fittings;
- Installation of pipeline appurtenances including air valves, isolation valves, and washouts;

- Construction of reinforced concrete chambers to contain and protect the pipeline appurtenances; and
- Installation of surge protection facilities, adjacent to the pump station that is located at the LR WTP.

3 KEY FINDINGS

3.1 Baseline Environmental and Social Conditions

The project area essentially comprises a long and narrow corridor, commencing at the existing LR WTP and extending along the route of the proposed pipeline (which is approximately parallel to the existing pipeline), and ending at the University Terminal Reservoirs in Dar es Salaam. The project site is located in sections of Bagamoyo District (within the Coast Region) and Kinondoni Municipal Council District (within Dar es Salaam Region). The town of Bagamoyo is located approximately 75 km north-west of Dar-es-Salaam on the coast of the Indian Ocean.

Topographically, the project area covers areas of land in a coastal belt zone, ranging from 0 to 100 meters above sea level. The pipeline crosses 4 moderately sized, but seasonal rivers, namely the Mpiji River, Nyakasangwe River, Tegeta River and Mbezi River. The project area experiences a modified type of equatorial climate which is generally hot and humid throughout the year, with an average temperature of 29°C. The hottest season is from October to March during which temperatures can reach 35°C. It is relatively cool between May and August with temperatures around 25°C. The main section of the project area, downstream of the initial 22 km of woodland and scrubs, has been somewhat transformed following decades of human activity. Some remnant pockets of forest remain at Chambezi, Chamangwe, Zinga and Kerege.

There are 82 villages spread across 16 wards in Bagamoyo District. The proposed pipeline will pass through 8 villages located in Kiromo, Zinga and Yombo wards. Bagamoyo Township is the biggest town in the district and the headquarters of Bagamoyo District Council. A number of rural settlements are fast growing, particularly those located along the trunk roads. As per the 2002 National Census, Bagamoyo District's population was 228,967.

In Kinondoni District, there are 27 Wards with 127 Mitaa (sub-wards). The main settlements include residential, commercial and industrial establishments. According to the 2002 population census, Kinondoni District's population was 1,088,867.

While agriculture is the main source of livelihood in Bagamoyo District, the economy of Kinondoni Municipal Council district is mainly characterized by informal and organized business. Within the project area, many of these are located along Bagamoyo Road.

The two districts covered by the project area display poor health and demographic indicators, including population to physician or health facility ratio, the number of water borne diseases, and the infant mortality rate. These social characteristics of the settlements in the project area suggest that providing enhanced water supply will have a bearing on the health of the population, including the more vulnerable groups such as women and children.

3.2 Emerging Issues and Concerns from Stakeholder Consultations

The following issues / concerns were raised by various stakeholders consulted during the study:

- During the dry season, the level of water falls to the extent that water can hardly flow over the weir located at the intake structure. The project should consider the possibility of constructing a storage reservoir to capture and store water during peak flows. DAWASA has plans to construct a flow regulating dam at Kidunda;
- The majority of stakeholders supported the project and felt that such initiative should have been taken long time back in order to boost the water supply. The project will increase accessibility to safe drinking water to a large number of poor and impoverished;
- Fire hydrants and other fire fighting gears should be bought and put in place;
- All relevant public should be actively involved throughout the project circle to make them fully aware of what is going on;

- A water distribution system should be put up to address water shortages in Bagamoyo and other urban communities living close to the pipeline;
- Noise pollution and air pollution should be accorded top priority, owing to the fact that during the construction period there will be movement of machinery and excavation will be carried out. Appropriate mitigation measures will be implemented;
- Reduction of water borne diseases in the project area was highlighted by many as one of the benefits of the project;
- District authorities and communities suggested involving local labour during construction to prevent HIV/AIDS and sexually transmitted diseases. It was also suggested that, during construction, the contractor should conduct relevant awareness campaigns on HIV/AIDS. This will be included in the contractual requirements;
- Minimization of adverse impacts on properties emerged as a major concern among stakeholders throughout the project corridor. The selection of the pipeline route has minimized this particular impact;
- Stakeholder suggested that the new pipe should be constructed close to the existing one. This is the case wherever practically feasible;
- Safety of the people inhabiting the pipeline corridor and the likely inconvenience that will be caused due to digging of the area, and occasionally disrupting essential services, was raised on many occasion. Appropriate mitigating measures will be implemented to minimize disruption to people living and working along the construction corridor;
- Continuous follow up of the management plan and the need for close monitoring during the construction period was highlighted; and
- Adequate compensation for the adverse impacts remained the most important concern throughout the project corridor. A preliminary resettlement action plan (RAP) is being prepared as part of these studies.

3.3 Potential Environmental and Social Impacts

The proposed project will have environment and social impacts. Both, positive and negative impacts were identified. The significant environmental and social impacts identified include:

POSITIVE IMPACTS

- Improved access to clean and safe water to the people of Dar es Salaam and various communities along the pipeline corridor;
- Employment for local labour;
- Enhancement of labour and other skills;
- Benefits to local businesses food sellers, restaurants, hotels, bars, shops, particularly fuel suppliers, transporters, and other service providers including electricity, water, telephone, internet, security, etc;
- Reduction in water borne diseases in the project area leading to improved health and sanitation status; and
- Income to suppliers of materials cement, aggregates, pipes, reinforcement, etc.

NEGATIVE IMPACTS

- Soil erosion resulting from clearing of vegetative cover and removal of topsoil;
- Adverse impacts on structures and income earning ability;
- Removal of trees and other flora;
- Potential for fuel spillage,
- Vibration resulting from compaction and other equipment;

- Disturbance to vehicular and pedestrian traffic caused by working in / near roads, and crossing roads;
- Safety of workers and the general public;
- Disposal of sanitary wastes;
- Spread of HIV / STDs;
- Loss of crops / structure (walls, fences etc);
- Disturbance of existing utilities and services;
- Potential for pipeline bursts;
- Risk of flooding during intermittent flushing of pipelines.

3.4 Proposed mitigation/Enhancement Measures

A properly designed environmental and social mitigation plan has been proposed for construction and operation phases, along with a “fit-for-purpose” monitoring plan. Mitigation and enhancement measures described for each potential impact include: use of appropriate mode of operations to produce less noise and dust; provision of Personal Protection Equipments (i.e. ear muffs, helmets, boots, dust masks, etc.) to employees; adhering to Occupational Health and safety Act No. 5 of 2003 by ensuring that project equipment & machinery are regularly serviced and maintained; developing safe handling procedures for oils and chemicals; Selection of pipeline route to minimize displacement; complying with air quality, soil quality and water quality standard regulations of 2007;provision of suitable diversions and adequate signage and flagmen; preparation and implementation of a traffic management plan; notifying communities of the changes in good time. Four potential spoil disposal sites have been identified along the route of the NTM. The elected disposal sites are those which are geologically stable, have no endangered species and are situated far from the riparian corridors.

These proposed mitigation measures will be incorporated in the proposed project designs and budgets so as to minimize, within reason, expected negative impacts on people, wildlife resources and the quality of environment in general.

4 ALTERNATIVE PIPELINE ALIGNMENTS

Various pipeline routes were investigated with the intention of minimizing the extent of structure / property relocation and other compensation issues. This has been accomplished to a large extent, and the remaining issues are relatively minor and well in proportion for a project of this scale.

Thus, the biggest social impact has been effectively mitigated at the design stage by selecting an alternative pipeline route in sections where potential social impacts were considered to be too great.

5 ESMP IMPLEMENTATION COSTS

The costs related to implementing and monitoring the Environmental and Social Management Plan (ESMP) will be derived from various sources, including the contractor’s works contract, the construction supervisor’s services contract, DAWASA’s implementing entity agreement with MCA-T, DAWASCO’s operating budget, the District’ operating budgets, NEMC’s operating budget, among others.

The estimated costs associated with implementing the proposed ESMP during the construction period stands at USD 500,000. Monitoring costs are estimated at 20,000 a year. The preliminary budget estimates for compensation and implementation of Resettlement Action Plan (PRAP) stands at Tsh 6671,225,364 (US\$ 4447483)

6 CONCLUSION

This Environmental Impact Assessment for the proposed pipeline project has fulfilled the EMA regulatory requirements, including the participation of all relevant stakeholders.

The consultations revealed that the local population and other stakeholders are generally positive about the proposed project, with the majority expressing the opinion that the project will help to solve long-standing water supply problems.

The findings of this EIA study show that, overall, the net local and national level socio-economic benefits of the project far outweigh the limited, relatively minor, and site-specific environmental impacts. Further, it is noted that the potentially significant social impacts involving relocation of structures and other social compensation issues, have been largely avoided by selecting appropriate pipeline routes. The other impacts are generally concerned with short-term construction issues, and these can be effectively and efficiently reduced, or eliminated, by applying appropriate mitigation measures and best international practice.

MUHTASARI WA RIPOTI ISIYOKUWA YA KIUFUNDI

UTANGULIZI:

Serikali ya Jamhuri ya Muungano ya Tanzania inatarajia kuongeza uwezo wa Mtambo wa Ruvu Chini wa kutoa maji kwa Mji wa Dar es Salaam na maeneo yaliyozunguka. Hii itatekelezwa kwa (i) kuongeza uwezo wa Mtambo wa Ruvu Chini wa kuzalisha maji kutoka lita za ujazo milioni 180 mpaka 270, na (ii) kuongeza uwezo wa Bomba la Maji linalosafirisha maji kutoka Ruvu Chini hadi kwenye matanki ya Chuo Kikuu cha Ardhi.

Ripoti hii ni matokeo ya Tathmini ya Athari za kimazingira na kijamii kwa hatua ya pili ya mradi, yaani kazi ya kuongeza uwezo wa kusafirisha maji kutoka Ruvu chini hadi Chuo Kikuu cha Ardhi ambayo inahusisha kujengwa kwa bomba lingine kubwa. Bomba hili kubwa linategemea kupita katika maeneo ya Wilaya ya Bagamoyo na Manispaa ya Kinondoni, ikikatisha vijiji 8 na Kata 3.

Madhumuni na Uhalali wa Mradi:

Mradi huu wa ujenzi wa Bomba kubwa la kusafirisha maji utakuwa na manufaa makubwa sana kwa jamii ya watanzania hasa ukizingatia kuwa mfumo wa usambazaji wa maji katika jiji la Dar es Salaam haujawahi kubadilishwa tangu ulipojengwa kwenye miaka ya 1970. Kwa hiyo, mahitaji ya sasa ya maji yanazidi uwezo wa bomba lililopo kwa zaidi ya lita za ujazo million mia mbili (200). DAWASA ina matarajio ya kuongeza uwezo wa kusafirisha maji hadi kufikia lita za ujazo milioni mia tatu sitini (360), na mradi huu unatarajia kutengeneza bomba jipya lenye uwezo huu. Manufaa makubwa ya mradi huu wa bomba la maji ni pamoja na kuongeza upatikanaji wa maji safi yakunywa, kuimarisha uwekezaji, afya ya jamii na maendeleo kwa ujumla kwa kuzingatia mkakati wa Serikali wa kuondoa umasikini.

Madhumuni ya 'EIA'

Eneo linalotarajiwa kuwa na mradi husika kama ilivyo kwa eneo lolote la nchi yetu inatarajiwa kuwa na athari mbali mbali kwa mazingira. Kwa kuzingatia hayo, MCA-T imeandaa uchambuzi wa kiufundi kuhakikisha madhara ya mazingira yatokanayo na mradi huu yanadhhibitiwa. Madhumuni ya "ESMP" na "EMP" ni kuwezesha Mradi huu wa Bomba kutekelezwa katika mazingira salama kuanzia wakati wa maandalizi ya Mradi, ujenzi na uendeshaji wa muda mrefu wa mradi.

Sera na Sheria:

Sera na sheria mbalimbali za Kitaifa na Kimataifa zimezingatiwa, hususani Sheria ya Mazingira ya mwaka 2004 na taratibu zake na Mwongozo wa Shirika la kimataifa la Milenia (Millenium Challenge Corporation).

Maelezo kuhusu Mradi:

Mradi huu umefanyiwa tathmini ya adhari za kijamii na kimazingira kufuatana na Hadidi za Rejea. Taarifa hii inaelezea mradi wenyewe kwa ufupi, hali halisi ilivyo kwenye eneo la mradi, madhara na faida za mradi zinazotarajiwa kwa mazingira na jamii kwa kutumia njia shirikishi na matokeo ya utafiti katika eneo la mradi, kupendekeza mbinu na mikakati ya kufuata ili kuzuia na kupunguza athari zenye madhara, kuimarisha na kukuza faida za mradi kwa mazingira na jamii.

Kwa kifupi taarifa hii inaonyesha kuwa kwa Kilometa 22 za mwanzo bomba linalotarajiwa kujengwa litapita katika mashamba ya watu, vichaka vya miti midomidogo na nyasi na nje kidogo ya eneo la hifadhi ya msitu. Baada ya hapo Bomba linafuata barabara ya Bagamoyo huku likikwepa maeneo ya makazi ya watu kwa kuhofia malipo makubwa ya fidia. Kwa sehemu kubwa bomba litajengwa katika maeneo ya hifadhi ya DAWASA (existing DAWASA easement) na TANROADS (TANROADS Right of Way).

Tathmini ya Athari zpa Mradi na Ufumbuzi wake:

Utafiti wa 'EIA' umeonyesha kuwa Bomba litapita katika maeneo ambayo hayana matatizo kwa mazingira na yasiyo na viumbe walio hatarini kutoweka. Bomba litakatisha kwenye mito minne mikubwa ya msimu. Mito hiyo ni Mpiji, Nyakasangwe, Tegeta na Mbezi na mito mingine midogomidogo. Ili kuzuia uharibifu wa mazingira katika maeneo haya mikakati ya kiufundi imependekezwa.

Kutokana na hayo hatua zifuatazo zimependekezwa ili kukabiliana na athari zenye madhara na kuboresha athari zenye manufaa:-

- Hatua za Kupunguza uchafuzi wa mazingira;
- Hatua za kupunguza makelele ya Magari na vyombo vya ujenzi;
- Hatua za kupunguza vumbi;
- Uboreshaji wa mazingira ya eneo la mradi kwa kupunguza mmomonyoko wa udongo na kupanda miti
- Hatua za kupunguza/kuepuka usumbufu kwa jamii ya wakazi waishio karibu na eneo la mradi;
- Kuhamasisha jamii.

Mpango wa Utunzaji Mazingira na Uboreshaji Ustawi wa Jamii (ESMP):

Kwa mujibu wa taratibu za tathmini ya mazingira Mpango wa Utunzaji na Uboreshaji Ustawi wa Jamii (Environmental and Social Management Plan - ESMP) umetayarishwa ukiainisha hatua za kuchukua ili kuondoa athari mbaya za mazingira. Katika mpango huu pia imeainishwa mikakati ya kuongeza na kukuza manufaa yatokanayo na utekelezaji wa mradi. Mpango huu huainisha vilevile shughuli za ufuatiliaji, majukumu n.k. Mpango huu utatekelezwa chini ya usimamizi wa DAWASA kwa kushirikiana na Idara nyingine za serikali kama vile DAWASCO, NEMC na Wizara ya Maji. Gharama za utekelezaji wa ESMP zinakadiriwa kufikia Dola za Marekani laki tano (US \$ 500,000) kwa kipindi chote cha mradi. Aidha, inakadiriwa kuwa gharama za fidia kwa watu watakoadhirika na mradi huu zitaweza kufikia shilingi 6671, 225,364 za kitanzania au Dola za kimarekani US\$ 4447483.

Tamati:

Wadau wote waliohojiwa katika ngazi ya kijiji/mtaa, Wilaya na Taifa waliunga mkono mradi huu.

Kwa kifupi mradi huu una manufaa makubwa ya kiuchumi na kijamii. Athari ndogo za kimazingira na kijamii za mradi haziwezi kuzidi manufaa makubwa yatakayopatikana kutokana na utekelezaji wa mradi huu muhimu kwa jamii husika na taifa letu kwa ujumla.

Matokeo ya tathmini ya kimazingira ya mradi huu muhimu kwa Taifa yanaunga mkono utekelezaji wake uendelee. Pia inapendekezwa kuwa utekelezaji huu uzingatie uhifadhi wa mazingira na jamii kama ilivyoainishwa katika taarifa hii.