LEARNING NOTES

INTRA AFRICA DESALINATION ROUND TABLE
"The beginning of a journey"

MOSES MABHIDA STADIUM GBC 1
DURBAN, SOUTH AFRICA

06 – 07 FEBRUARY 2017

Hosted by eThekwini Municipality and the City of Oran (Algeria) as part of the Sister City Programme

Opening and Introductory Remarks

South Africa has been experiencing drought and water shortages for the past four years. EThekwini Municipality has been exploring ways to adapt and perhaps to mitigate the negative effects of water scarcity. The lack of rainfall has far-reaching effects on daily lives because people need water for drinking, washing, cooking, growing crops, and many other activities. Water scarcity severely affects the quality of life and hence preservation needs to be top priority for municipalities. Mitigating measures need to be put in place and explored timeously. Water desalination has been identified, and explored as a solution to curb the crisis of water shortage in Oran, Algeria, which is a Sister City of eThekwini Municipality. Desalination is a process of removing minerals and salts to yield fresh drinking water that can also be used to agricultural and industrial activities. It is widely viewed as an alternative or as a solution to the challenge of water shortage. Desalination has not been prevalent and/or a priority for policy and decision makers due high costs of implementation, as compared to more conventional methods. It means that in exploring desalination as an effective means of addressing the effects of drought, careful consideration must be placed in its advantages and disadvantages. However, water desalination remains an innovation and alternative solution to water scarcity.

Although eThekwini Municipality's aspiration is to become Africa's most caring and livable city by 2030, it is still experiencing a set of challenges – unemployment, the prevalence of HIV/Aids, poverty, water shortages and so on. However, there are a number of plans and strategies that have been commissioned to position Durban as an important strategic and global player. South Africa is a water scarce country and is ranked as one of the driest in the world. There is an urgent need to channel efforts towards ensuring productive use of water and exploring innovative ways of developing adequate water resources to meet socio economic objectives.

The purpose of the learning exchange was to create a platform between eThekwini Municipality and the City of Oran to share knowledge and experiences of implementing a desalination programme as a solution to tackling the challenge of water scarcity.

Aims and Objectives

The objectives of the learning exchange were as follows:

(i) To create a knowledge sharing platform for decision makers within the water sector on Water Desalination;
(ii) To draw lessons from the City of Oran as a "leader" of this innovation in Africa;
(iii) To explore pros and cons in applying them not only in the South African context, but specifically in the case of eThekwini Municipality; and
(iv) To create a way forward and develop effective ways of embarking on water desalination

Programme

DAY 1	Monday 06 February 2017			
08:00 – 08:30	ARRIVAL, REGISTRATION: TEA AND COFFEE			
SESSION 1	OFFICIAL OPENING AND WELCOME: Eric Apelgren: Head of Intergovernmental Relations			
08:30 – 08:40	Opening and Introductory Remarks	Eric Apelgren	Head: Intergovernmental Relations	eThekwini Municipality
08:40-09:00	Welcome Address	Hon. Cllr. Zandile Gumede	Mayor	eThekwini Municipality
09:00-09:15	Message of Support	Hon. Ntombenhle Nomfundo Mkhulisi	Deputy Chairperson Mayor of King Cetshwayo	SALGA-KZN
09:15-09:30	Overcoming Water Scarcity Problems through Desalination: An Overview	Mr. Berrahman Mohamed	Water and Sanitation Unit	City of Oran
09:30-09:45	Address By Head of Mission	His Excellency. Mr. Juan Sell	Ambassador of Spain	South Africa
09:45-10:00	Address By Head of Mission	His Excellency Mr. A-EL-N Belaid	Ambassador of Algeria	South Africa
10:00-10:30	The Challenge of Water Provision in KZN: Seeking Innovative Solutions	Hon. Nomusa Dube – Ncube	MEC	KZN – COGTA KZN - DWS
10:30-11:00	TEA, COFFEE AND NETWORKING			
SESSION 2	**Championing Desalination in the African Region: Learning from the Algerian Experience** How Oran became the leading Desalination Region: **Eric Apelgren and Sogen Moodley**			
11:00-11:15	The Vision of EWS	Ednick Msweli	Head: EWS	eThekwini Municipality
11:15-11:45	National Programme of Water Desalination in Algeria	Mohamed Taibi	Project Director	Algerian Energy Company
11:45-12:15	Effects of The National Program of Water Desalination in Algeria	Maamri Mehdi	Non-conventional Water Director	Algeria Water Utility
12:15 – 12:45	**Case Study:** Beni Saf R.O. Desalination Plant in Algeria	Muhammad Chaffi	Managing Director	Beni Saf Water Company
12:45-13:15	Question and Disoussion on the Key Learnings of Oran	Facilitator	ALL	ALL
13:15-14:15	LUNCH			

INTER-AFRICA DES ALINATION ROUNDTABLE DISCUSSION : 06 FEBRUARY 2017

SESSION 3		**MODERATED PANEL DISCUSSION**			
		DESALINATION: AN INNOVATIVE SOLUTION FOR WATER SCARCITY IN THE AFRICAN REGION: WHAT ARE THE POTENTIAL BENEFITS AND CHALLENGES? **Moderator: Dr. Sogen Moodley: MILE**			
14:15-15:15		Low Energy Desalination Plant	Speedy Moodliar	Senior Manager: Water and Sanitation	eThekwini Municipality
		Effective Infrastructure and Innovation Partnerships	Dhevan Govender	Senior Manager: Commercial and Business branch	eThekwini Municipality
		Financing Strategies	Luis Miguel Arauzo	Director O&M Water	Tedagua Plant Operations
		Lessons Learnt in the Oranian Desalination Project	Chaffi Muhammad	Managing Director	Beni Saf Water Company
		Is Desalination a Potential Solution for KwaZulu-Natal	Kevin Meier	Manager: Planning Services	Umgeni Water
SESSION 4		**SUMMARY WAY FORWARD AND CLOSURE**			
15:15-15:30		Summary of Key Lessons Learnt	Facilitator	MILE	eThekwini Municipality
15:30-15:45		Way Forward and Closing Remarks	Eric Apelgren	Head: IGR	eThekwini Municipality
		END OF THE SESSION			

DAY 2		**Tuesday 07 February 2017**
08:30 – 09:00		**ARRIVAL, REGISTRATION: TEA AND COFFEE**
SESSION 5	INTER-AFRICA DESALINATION ROUNDTABLE DISCUSSION	**Opening and Welcome**
09:00-11:00		**REFLECTIONS ON LEARNINGS**
11:00-11:20		**DEPARTURE TO SITE VISIT**
11:20-12:00		**SITE VISIT** Bluff Headland – Proposed Site for a Desalination Plant
12:15-13:00		**RETURN TO VENUE**
13:00-13:30		**DISCUSSION AND WAY FORWARD**
13:30-14:30		**LUNCH AND END OF THE SESSION**

Welcome Address on behalf of Her Worship the Mayor, Councilor Zandile Gumede, eThekwini Municipality

Her Worship the Mayor, Councilor Zandile Gumede alluded to the "Sister City" partnership between the City of Oran and Durban and the importance of sharing ideas and collaboration. Oran has implemented solutions (i.e. seawater desalination services) to the water challenges in their city and Durban intends obtaining knowledge in order to explore alternatives and innovation for water service delivery. This comes at a time of drought and water shortages which are exacerbated by rapid urbanization, population growth and climate change factors. There is a growing water demand for household consumers as well as the agricultural and industrial sector. Alternatives and innovation for water services are critical to address the challenge of water scarcity. The recent drought elevated the need for all stakeholders to find ways of responding to the unprecedented water shortages. The discussion on the benefit of desalination innovation to address water supply challenges has not received adequate attention. It is important to form partnerships with an attempt to find solutions to the current water challenges. Desalination is a viable alternative for water supply.

Message of Support by SALGA

The South African Local Government Association (SALGA) as the custodian of the affairs of municipalities has adopted a 5 year strategy to help shape and assist Municipalities in dealing with the challenge of water shortages. This document has the following key areas:

- Planning and Infrastructure Development;
- Operations and Maintenance;
- Water Conservation and Water Demand Management;
- Drought Management; and
- Alternate Use

SALGA has taken a stance of supporting water desalination as an alternative through research and community partnerships. The Department of Water and Sanitation shares the same sentiments of playing an active role in addressing water shortages. The emphasis is placed on "Drought Management" and the impact of water shortages in South Africa. A number of stakeholders are continuously converging to attain short, medium and long term solutions. Funding was made available to municipalities as relief to alleviate the drought and its after-math. The relief measures include increasing the amount of drilled boreholes (especially in rural areas); identifying and safeguarding natural springs; supplying storage "Jojo" tanks for ablution facility, garden and washing use; and the effective management of water.

Umhlathuze Municipality commissioned a water desalination plant in Richard's Bay in 2016. This emergency intervention is indeed historical as it is the first of its kind in KwaZulu-Natal. Energy, land, natural gravitation, environmental impact, sea intake, brine discharge and distance to existing network should be considered in the conceptualization of a desalination program. In addition, political, practical, technical solutions need to be considered as well.

While the merits of water desalination as an alternative method for water supply were at the forefront, disadvantages should also be acknowledged. Resistance towards water desalination is mainly attributed to the high financial costs of implementation. There are also socio-economic, cultural and environmental factors that must be considered.

In responses to the drought, various stakeholders are continuously converging to discuss ways and means to address the water demand and stifling growth of water resources. As a result, the KZN Provincial Government has developed a strategy to deal with water challenges. As part

of the strategy, desalination has been identified as an alternative intervention. It is seen as solution to overcome the drought and water shortages in general. There are potential benefits of ocean desalination, but the economic, cultural and environmental costs of wide commercialization remain high. However, despite the major barriers to desalination, interest has recently mushroomed as the availability of technology has improved; water demand has increased; and the costs have dropped to commission desalination projects have been significantly been reduced.

Municipalities need to be supported to discharge their duties in the delivery of water services. As the saying goes, "*water is everyone*'s *business*". There is a need to take advantage of technology solutions for water provision. South Africa is not a water rich country, yet we need to take care of socio economic development imperatives. Desalination is the main alternative mechanism to the water scarcity challenges.

Overcoming Water Scarcity Problems through Desalination: An Overview

The City of Oran has adopted seawater desalination as a solution to overcome water scarcity problems. In order to achieve this, partnerships have been the cornerstone to successfully undertake desalination programs. Oran is located in a semi-arid zone, where annual rainfall rarely exceeds 400mm. For almost ten centuries, the population of Oran has never exceeded 30 000 people. However, this has changed as there has been an influx of people as a result of the development of economic activities. Oran now has a population that exceeds 672 921 people that has resulted in increased water demands and pressure on local resources which were often brackish and were experiencing salinity. This has led to periods of extreme and dramatic water restrictions due to "chronic shortages". Population growth and urban agglomeration has had major repercussions for the supply and distribution of potable water. If water resources are gradually reduced, the population is bound to face restrictions, rationed distribution and "water-load shedding". The situation has been worsening over the years due to a variety of causes related to availability of dams and drought. The sea water desalination option was commissioned by the president in 2001 as an emergency attempt to deal with the water deficit. The choice to focus on non-conventional means of water supply has led to significant improvements in the supply of drinking water.

Address by Head of Mission, Ambassador of Spain

His Excellency Mr Juan Sell, Ambassador of Spain in his address shared a sentiment that water and sanitation is a basic human right that ensures the dignity of the people.South Africa has gone through a serious drought period over the past four years and dams have failed. Water is an important factor for socio economic development. South Africa will be signing a MOU with the Kingdom of Spain on water related issues which include desalination. South Africa needs to attract foreign direct investment to deal with water scarcity. Partnering with the City of Oran is an advantage because historically, Algeria has a good relationship with South Africa which dates back to apartheid resistance. Algeria contributed significantly to the liberation struggle of South Africa. Water solutions will enhance the fight against poverty, inequality and unemployment.

Address by Head of Mission, Ambassador of Algeria

The Ambassador of Algeria to South Africa, His Excellency Mr A-EL-N Belaid reflected on how the country was recovering from terrorism and the realisation of water shortages. The City of Oran partnered with a private company and this has actually led to an excess of water that is being produced. There was an overall emphasis that the South Africa-Algeria bilateral

relations must be strengthened. Both conventional and non-conventional means are used to produce purified water fit for human consumption in Algeria.

Over the years, Algeria has worked tirelessly in exploring innovative ways to produce potable water. The Algerian Government initiated an investment program of seawater desalination and undertook a number of technical-economic studies. Emphasis should be placed on the following considerations before embarking on a project of this magnitude, namely - Site selection; Environmental impact; Technology to adopt; The estimated overall investment; production costs; and forecast price of m^3; historical – political relationships should be used as a foundation to advance social, economic, political and cultural development. Cooperation and exchange is the cornerstone of solving the problems of water. Unavailability of water will hamper economic effort in any country. The management and governance (also highlighted by SALGA) will be critical for a successful desalination programs.

The Challenge of Water Provision in KZN: Seeking Innovative Solutions by *Department of Water and Sanitation*

A "Strategic Water Partner Network" has been established to find solutions to the water challenges. South Africa has developed a blueprint planning document detailing water regulations; planning and infrastructure development; operations and maintenance; illegal connections; water losses; and drought management. South Africa has instituted a set of interventions – (i) raised dam levels; (ii) transferred water; (iii) provided financial relief for ground water, (iii) boreholes, (iv) and natural springs; (v) identified and stopped water losses; and (vi) tanked water especially to rural areas.

CHAMPIONING DESALINATION IN THE AFRICAN REGION: LEARNING FROM THE ALGERIAN EXPERIENCE: HOW ORAN BECAME THE LEADING DESALINATION REGION

A Perspective from COGTA by Andre Evetts

Although COGTA has six key mandates, the most relevant to municipalities are (i) providing support to municipalities; (ii) building municipal capacity, and (iii) monitoring the performance of municipalities. The remaining three mandates relate to intervention and administration. KZN is fortunate with the level of cooperation amongst different stakeholders. However, there are backlogs, particularly, in the provision of land and housing. Currently there are 336000 households living in these settlements that need to be addressed. There is a need to innovate with financial modeling otherwise it will take a long time to implement critical projects. Historical imbalances and lack of maintenance of infrastructure are the biggest challenges in South Africa. There has been serious regression of infrastructure maintenance. The infrastructure value is depreciating rapidly at an increasing rate. There is a need for financial and technical intelligence to deal with water scarcity. South Africa needs accountants, engineers and politicians to be on the same page of understanding in order to deliver projects successfully.

The Vision of EWS by E. Msweli

Although eThekwini Municipality has won many achievements and received accolades, water remains a challenge in the City. The demand of water supply has increased across the city, perhaps as a result of rapid urbanization and addressing historical backlogs. Over the past 20 years, eThekwini Municipality has extended the network and the municipality is investing heavily in water infrastructure to provide water in rural areas and informal settlements. Bucket eradication, interim services, reuse, desalination, water conservation and demand management

are some of the interventions that the city has embarked on. Although there are water restrictions, eThekwini Municipality has not yet received the 15% threshold requirement to reduce demand.

National Programme of Water Desalination: Effects of Water Desalination in Algeria by the Algerian Energy Company

Algeria identified issues and developed a medium to long term strategy to deal with the water shortages. The shortage of water in Algeria can be attributed to poor rainfall, socio economic development, limited range of dams and groundwater sources, as well as the concentration of the population in the north of the country. Almost 80% of the population is living in urban areas. At least 14 - 16% of water supply in Oran is derived from desalination. Investment in desalination will ensure that the growing demand of the population is accommodated. In order to remedy the "water stress" endured by Algeria during the 90s and to preserve at the same time the underground water which was strongly solicited, the government of Algeria embarked on a major and large scale program of investment in seawater desalination. The main objective was to satisfy the growing demand of the population in drinking water as well as the water needs for irrigation and industry. Another objective was to integrate the contribution of new desalination technologies for optimal quality and quantity of desalinated water and controlled production costs.

In order to deal with this important investment program of seawater desalination initiated by the government, several technical economic studies entrusted to specialized international cabinets had been launched in order to determine – site selection; impact on the environment; technology to adopt; the estimated overall investment; and the cost of production and the forecast price.

Power generation and water desalination goes hand in hand. The Algerian Energy Company (hereafter referred to as AEC) is public joint stock, created in 2001. AEC is mainly responsible of the promotion of large projects in partnership with internal companies in the areas of seawater desalination and power generation. Sponsorships and partnerships play a significant role in the delivery of desalination programs and the project development process. The role of AEC, as project sponsor, is the development of specifications for tenders; reception and assessment of technical and commercial bids; and the launching of the project after selecting the successful tenderer. The role of AEC as a public partner is to be partner and shareholder; co-develops with foreign partner according to the international standards; as well as supports the project companies and the foreign partner with local administrations. AEC is among the first public companies to have established foreign and local funding in the project financing process.

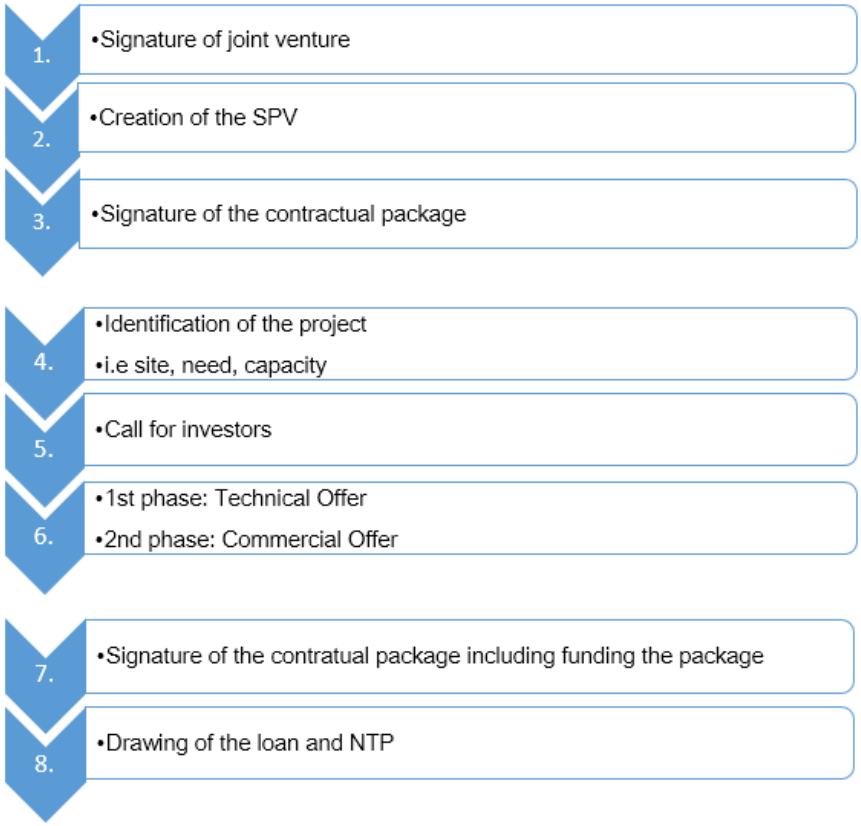
The City needs to set up a foreign and local financing framework, structure for project financing and a funding model suitable for local conditions. Special interest rates should be offered in order to benefit all partners. In Algeria, they chose a "reverse osmosis" process technology that is less expensive, with less area required, and not entirely dependent on electricity.

Partnership Project and Development Process

1. Launch of tenders and selection of partner in the design, construction, operation and maintenance of a desalination plant.
2. PPP for execution of the project according to the DBOO "Design, Build, Own and Operate" and project financing basis.
3. Signing of the joint venture and creation of the project company (SPV).

4. Implementation of project funding – the project financing relies on the ability of a project to generate predictable and regular cash flows, confirmed by a financial model in order to cover project OPEX, service debt, and provide equity compensation for investors in the project.
5. Signature of the contractual package and realization by the SPV of a desalination plant construction and operation.

The Project Steps



AEC is among the first public companies to have set up foreign and local financing, structured in project financing. Project financing as a funding method was adopted in a number of projects in Algeria. The process technology used in most Algerian projects is "reverse osmosis" because it is less expensive in terms of energy; the installation of the desalination plant requires a smaller area; and desalination is not entirely dependent on the production of electricity.

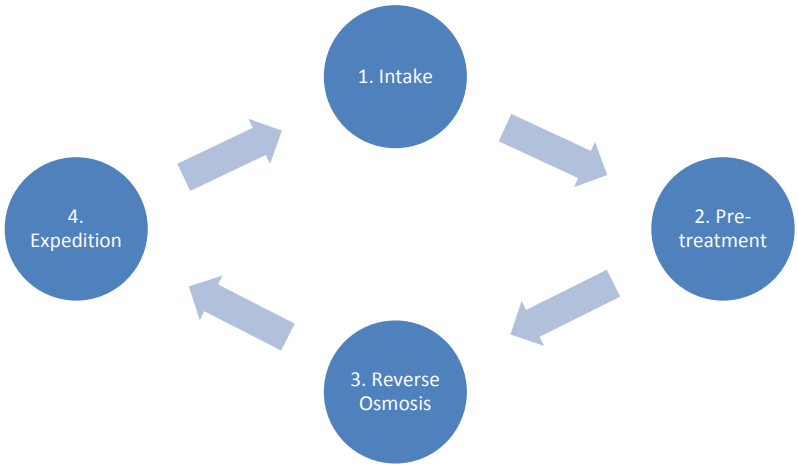
The national program for seawater desalination has radically changed the universe of Algerians regarding the availability of drinking water. Thus, the desalination program contributed, with inputs of the new hydraulic dams reducing the specter of the water shortage. Currently, with the daily production, desalination in Algeria is able to meet the drinking water needs of the population. The actual production is expected to be increased after the lifting of certain technical constraints encountered in some projects. The vision and perspective of the country to secure water needs of the population remains a priority; while developing operation activity to achieve peak capacity.

Case Study: Beni Saf R.O. Desalination Plant in Algeria by Chaffi Mohammad

The water potential sources and facilities are diversified across different regions across the country. It consists of both conventional and non-conventional forms of water production. Renewable ground water was an essential water source for drinking water and irrigation in Algeria. However, the availability of water was eroded by aridity, over exploitation of aquifers, and the proliferation of illegal drilling. Recently, the exploitation of fossil groundwater sources has taken a different scale to meet the demand of drinking water. Algeria consists of at least 70 dams and the water capacity will be increased to 84 dams. Parallel to this process, the number of sewerage treatment plants will also be increased, and the water will be used for irrigation purposes. The option of desalination has become a necessity in Algeria, especially after the drought in 2000. The desalination water now accounts for 16% of drinkable water in Algeria. The Beni Saf Seawater Plant has been plating a very important role in potable water alimentation in the area. Water production in Algeria now has a positive impact on the agricultural sector. Water in dams and wastewater is now used solely for irrigation.

The desalination plants are actively involved in university education. Students of different specialties do their practical internships at the plant. New engineering specialties have been created and relationships established. In summary, desalination has become a necessity in Algeria following the drought and will provide a source for drinkable water. Site, area, sea water capacity, number of units, technology, energy consumption, intake, pretreatment, chemical pretreatment, energy recovery, post treatment, CAPEX, and water price are ingredients for strategic commissioning of desalination.

Desalination Process



"We need to be clever about money and technology" Andre Evetts

Question and Discussion on the Key Learning's Of Oran

1. What comparisons can be made with regards to the COST of desalination in Algerian and South Africa?

- It depends on government subsidies; when the investment company is granted a tax holiday; on the price of electricity; on the location and site choice of site; as well as the pretreatment option.

2. What are the lessons that can be learned in the ROLLOUT AND IMPLEMENTATION of desalination?

- The lessons learned are multi fold and range from governance, institutional framework, leadership, management, technical capacity, and available technology.

3. What is the IMPACT OF DISCHARGING BRINE ON THE ENVIRONMENT AND MARINE LIFE?

- The discharge of brine needs to be treated and neutralized before it is discharged with the intention of not destroying the environment and sea life.

4. What is the SINGLE MOST IMPORTANT STRATEGIC FACTOR to consider in thinking desalination?

- Government should CREATE ENABLING CONDITIONS, like Algeria did.
- The FINANCIAL MODEL chosen should produce an AFFORDABLE UNIT COST.
- The project must be BANKABLE.
- There is a need for TECHNICAL SKILLS and HUMAN CAPACITY to drive the entire process from inception to operation and maintenance.
- ACCESS TO WATER should be considered a human right or not a commodity
- The ENERGY COST must be reasonable.
- Sea water is the most RELIABLE ALTERNATIVE resource available and municipalities can mitigate risks of water scarcity.
- LOCALITION, TECHNICAL VIABILITY and SUITABILITY of the site are most critical.

DESALINATION: AN INNOVATIVE SOLUTION FOR WATER SCARCITY IN THE AFRICAN REGION: WHAT ARE THE POTENTIAL BENEFITS AND CHALLENGES?

Low Energy Desalination Plant by Speedy Moodliar

The eThekwini Remix Project (also known as the "Blended Process") is a demonstration project consisting of a combination of conventional and desalination remix processes. It uses existing infrastructure and was granted environmental authorization and focuses on capacity building/shadowing. In essence, it is a catalytic project to address future demands that will arise from proposed developments. The City has partnered with an international agency (grant funder) and has obtained funding for a pre-feasibility. The concept includes a general overview, capacity building, cost, extraction and disposal processes, land negotiation, existing infrastructure, EIA, and project team. eThekwini Municipality is on 15 – 30% restriction and there is a need for mitigation measures. Modular desalination plants are needed and the city needs to harness energy from wave motion/action as a sustainable solution. There is a set of

challenges given the current conditions –turbidity during storm, excessive algae, and high levels of sulphur.

Effective Infrastructure and Innovation Partnerships by Dhevan Govender
PPP contract agreements have existed for a long time in eThekwini Municipality for a variety of projects across the City. A project consortium has been established and granted a concession contract. PPPs offer a win-win situation in a number of aspects, for example, transfer of skill, reduction of costs, guidance, expertise, investment, affordability, efficiency, effectiveness, capacity and transfer of risk.

"It is important to partner with the private sector when the municipality thinks they can do things themselves…it is often the best time…it enhances capacity…"

Financing Strategies by Luis Miguel Arauzo
At least 80% of a desalination project must be under a PPP structure. Obviously, there are many options – for example, bonds, equities, shares etc. – that can be considered for cost and profit sharing. It is important for authorities to be involved and support the PPPs. The municipality must also be in good standing to obtain funding and finance. It is also important to consider cost and opt for less costly projects over shorter periods of implementation, because financial institutions are often concerned with risk factors.

Lessons Learned In the Oranian Desalination Project by Chaffi Muhammad
Desalination is not an option but the main source of water supply for the future. In Algeria, it is a necessity and a permanent solution, regardless of costs involved to produce water. The location of the site is critical for economic spinoffs, reduced costs, water security, and permanent availability of water source. It is important to have a mortgage on the plan and the PPP is often the best option. Site selection/choice will influence the price/costs. The partnership should be based on the tried and tested methods of association. Desalination is also context and governance specific.

South Africa has three existing unsustainable seawater desalination plants in the Western Cape. KZN is not really keen on this option. We should not fall on the trap and "knee jerk" because of drought. The last similar drought occurred some 200 years ago. Municipalities need to understand "business" and be efficient before considering PPPs. Recycling, for example, has not been fully exploited. However, it should be noted that time and costs are interrelated – if we delay implementation, we will pay a hefty price in the future when we are under pressure. Let's not be caught "napping" like what happened to ESKOM South Africa, therefore, long term financing solutions are to be devised.

Is Desalination A Potential Solution for KwaZulu-Natal? By Kevin Meier
Generally, there are a number of challenges in KZN – sloppiness of the terrain/topography, old infrastructure, cost, duration to complete projects as a result of SCM processes etc. – and desalination can only be area specific. Plans for increasing the number of plants in the province are currently underway. The KZN Midlands, northern and southern Durban are considered to be the potential sites where desalination plants can be implemented. Resulting from a feasibility study conducted for Umgeni Water, implementing a desalination plant in northern Durban is not viable. To pump water uphill is expensive, unsustainable and perhaps not feasible. The south of Durban seems to be an ideal location to supply desalination water. However, there are plans to develop the existing conventional plants in Umkhomazi and serve the entire southern region of the Municipality

Price fixing becomes a challenge. The sea is not affected by drought or climate change, but the devil is the cost. The traditional option is more cost effective and desalination can only serve as a supplement option. The traditional water supply is still available and cheaper.

SUMMARY AND ROUNDTABLE DISCUSSIONS

Some Reflections…..!

- In context of drought/water scarcity, **INNOVATION** is key!
- If desalination is a viable option, we must make important **TECHNICAL DECISIONS** about location, the environment, energy costs etc.
- Must **PLUG** existing gaps: e.g. 40% water loss.
- **GOVERNANCE** must be considered – **CITIZEN ENGAGEMENT** and **TECHNICAL CAPACITY** at municipality.
- **CONTEXT MATTERS!** Adapt before adopting! In Algeria they had no option…..
- Desalination remains an **IMPORTANT OPTION**, as part of **ALTERNATIVE SOLUTION.**
- Desalination is **EXPENSIVE!** Who foots the **BILL/COST?** What is the **BEST FINANCIAL MODEL?**
- Need **STRATEGY FOR RESERVES –** energy and water.
- Access to water can be **CLASSIFIED AS A COMMODITY**, but is **RECOGNIZED AS A BASIC HUMAN RIGHT.**
- Sea water is the most **RELIABLE SOURCE OF WATER** and is **AVAILABLE AS AN ALTERNATIVE RESOURCE.**
- **COST SHOULD NOT BE VIEWED IN ISOLATION** to ROI, risk and security of supply #guaranteed supply.
- **SKILLS** are needed to **DRIVE THE ENTIRE PROCESS** (from inception to completion and maintenance).
- **TECHNICAL VIABILITY AND SUITABILITY** of site/location are **CRITICAL FACTORS.**

The Big Questions

- Do we count the costs or the need to provide water?
- What is the best model for energy supply/option, policy options, PPPs, pricing, user/customer benefits?
- What comparisons can be made with Algeria on the role of government, partnerships and related dividends?
- How do we address profitability, bankability and feasibility of a desalination project?
- What is the best for financial model for South Africa?
- What are the associated risks in SA? Who covers liability and what is the precedent for underwriting? What are the implications for credit rating and confidence levels?
- How relevant is the municipal integrated resource plan – for inclusion of IPP? Are there implications to policy shifts and review minimal for local municipalities?
- How do we improve community engagements towards making such decisions, interface on policy review with other spheres of government – lobbying for policy shifts?
- Is it time for a new legal framework for water and PPPs?
- How will economic growth trigger the path for desalination? How futuristic are our plans and are they aligned to the growth path?
- What are the options for generating more revenue?

- Where is political support in all of this?
- What is the cost of not doing anything?

Discussion Points….

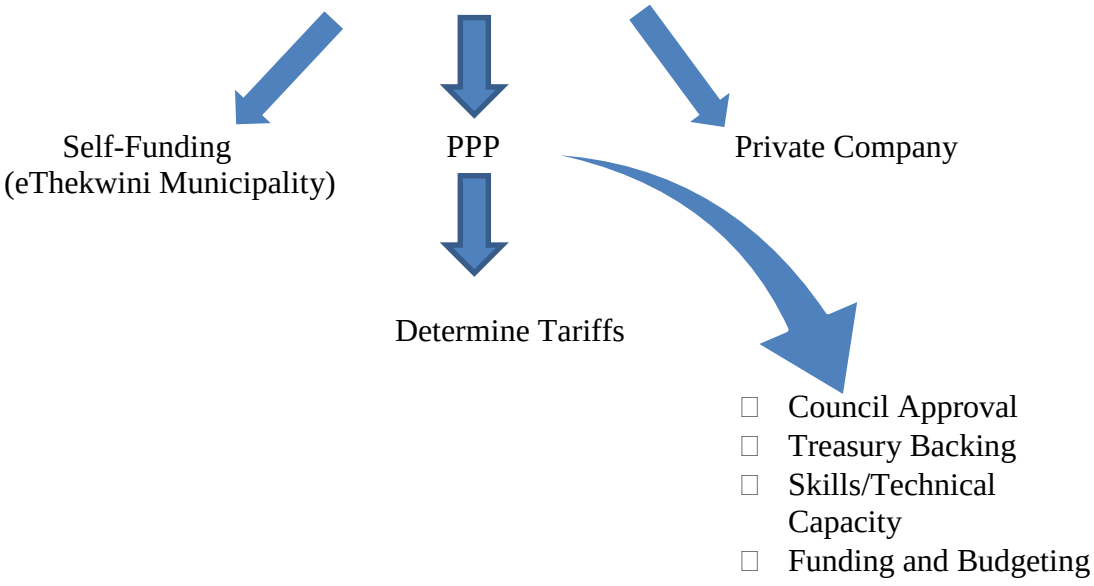
- The financial model (i.e. unit cost) needs to be established in the context of South Africa.
- Fast tracking desalination project with support from government creates an enabling environment.
- Context matters! Algeria had no option and South Africa has some option to consider conventional methodology of water supply.
- Future planning is everything particularly in light of growth and economic development projections. Currently, cost is a factor that can be recovered in the future.
- There is a need to work with institutions of higher learning and invest in training of young engineers, accountants and law makers in the field of desalination and PPPs in order to increase technical capacity.
- Are we engaging people on the ground? Governance and citizen engagement is of utmost importance.
- Cost can be reduced if energy is derived off grid, for example, solar energy, and hydropower or wave motion.
- The political system, history and context needs to be taken into consideration. Algeria has a history of socialism and water has been heavily subsidized by government through oil and gas. Government also ensures that they take control of at least 51% of the economy. On the other hand, South Africa has been based purely on capitalism, apartheid and a free market system. The output has been the same but the process has been different. One other staking difference between the two countries is that South Africa does not have a public banking system to finance development and infrastructure.
- Bankability, feasibility, profitability, sustainability and emergency are ALL critical factors.
- Business is Business! ROI (in dollars vs. local currency), insurance, dividends, electricity costs, risk, confidence levels, guarantors, resources plans are important elements for banks and developers.
- The government model of South Africa has never been tested since 1994. The hypothesis is that South African municipalities are overregulated and hence there is a need for policy makers to decentralize power and change policies and hence municipalities need to lobby for this to happen.
- Power and water are fundamental for economic growth. We need different regulatory framework for desalination, and perhaps South Africa needs to consider privatization.
- Water supply is directly linked to economic growth path and hence we need to be futuristic.
- Municipalities have a limited scope to generate income and profit as a result of a basket of factors – regulation, FBS alternatives, tariff capping, pipeline funding etc.
- The costing model will depend on the option lies on the proposal to be put forward.
- Continued conversation on exploring the topic in the continent is required. Collective thinking and lessons sharing will be crucial to craft an approach on desalination – differential approach. If PPP is the better option for various reasons outlined coupled with support from National Treasury, City leadership needs to unpack the option.
- What would be a suitable model for creating and supporting local employment?
- We need to pick up lessons from our existing key projects on PPPs.

- Consideration on the procurement implications for the proposal is of outmost importance.

Some Lessons Learned

- eThekwini Municipality and Oran are Sister cities and have a cooperation and partnership agreement. eThekwini Municipality has existing PPPs with a number of projects. However, EM needs to enhance these arrangements (i.e. technology and expertise). Perhaps an MOU can be established with the City of Oran. The notion of desalination is growing and hence we need an enabling policy that ensures delivery. Lessons can be derived from Algerian Policy Frameworks in the delivery of desalination.
- The involvement of political leadership is critical and hence lessons from Algeria can be drawn to ensure proper governance, awareness, communication and engagement with communities - how they deal and manage political dynamics.
- The issue of "costing" is a thorny issue, and there are always concerns that relate to tariff structures.
- Policy review mechanisms deregulation, ensuring municipalities make profit, and financial models that the burden is not transferred to the consumers.
- What are the benefits of desalination? Will we meet our demand in future? We need to do our homework before a decision for desalination is made.
- The tariff structure needs to be defined because it is related to the cost of commissioning. We need to consider examples from around the world.
- Technical capacity and expertise is available, and the EM needs to decide on the financial model.

Proposed Costing Model



Way forward and conclusion

After deliberations and thorough engagements, the participants reflected on the discussions and agreed that there are crucial areas that require attention to advance the progress towards desalination as alternative solution to water shortages. They are as follows:

- South Africa has a strict regulatory framework with regards to compliance and procurement processes in the rollout of projects. Lessons need to be shared widely across provinces and perhaps nationally. We also need to explore options and apply differential approaches to different municipalities.
- Bilateral agreements need to occur to kick start processes but timeframes need to be established. Perhaps a study visit to Oran, Algeria needs to be considered to obtained firsthand knowledge of the desalination program.
- MILE needs to organize a learning exchange on PPPs and various innovations requiring partnerships and specialized expertise on structuring a desalination program and invite all water stakeholders to attend to share knowledge and ideas.
- There is a need to structure a MOU between EM and City of Oran.
- Policy review mechanism enabling for desalination must be championed by SALGA
- Lessons on mobilizing political leadership and governance with citizen or communities need to be explored extensively.
- The structure tariff model for desalination, cross subsidization and other options also need to be explored.
- Policy review mechanisms and deregulation in support of revenue generation without simply passing substantial costs to the consumer needs to be established.
- More learning's on considering desalination options and economies of scale critical in decision making – what feasibility studies exist?
- Meeting to explore at transactional mechanisms.