



The Water Herald

Learn from your peers

Volume 3, Issue 1, January - March 2011

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Lake Victoria:

How Reliable is the Resource for
Water and Power Utility Businesses?

Water is Life
Sanitation is Health

"The Customer is the reason we exist"



Water is Life

Sanitation is Health

“The Customer is the reason we exist”

Managing Director's Message



Dr. William T. Muhairwe, MD-NWSC

It gives me pleasure to once again share with you the experiences of working in the water and sanitation sector, through our magazine, the Water Herald. In this issue, the theme focuses on what works to ensure improved water and sanitation service delivery in developing countries. It is important to note that various water practitioners, utility managers, industrial water users, technologists and academics have advanced various schools of thought about what they think works best for developing countries. In my view, I wish to say that there is no panacea for all countries but “home grown solutions” are the key.

First and foremost, we need to contextualise the foundations and history of most water utilities in developing countries. For the case of Africa, most utilities were established during the post colonial era, served smaller urban populaces, and were largely financed by central governments. As populations increased and development took root, demand pressures for increased service delivery increased. Unfortunately, most governments were strapped by inadequate resources to run them, and above all, the management in these utilities was appalling. The resultant solution being advocated for then, was privatisation.

Most utilities were or are typified by poor leadership, poor management, inadequate goal setting, poor accountability and governance, attitudinal problems, external interference and inadequate financing. Of all these challenges, poor leadership is the greatest

impediment to sound and vibrant performance of utilities. Therefore, addressing the leadership challenge, to me, is the most important and critical aspect of ensuring better and improved water and sanitation service delivery in most developing countries. Utilities and other service providers need leaders who can steer them forward, with a clear and purposeful vision. And the vision must be a challenging one, but also easily understood by all. A do-it-yourself approach to solving most of the challenges and innovation works for developing countries. No foreigner knows the internal workings of an organisation better than the staff themselves. What the staff need is a clear sense of leadership and motivation mechanism.

In regard to financing inadequacies, a cocktail of financing options needs to be adopted to bridge the shortages. However, it is imperative that organisations first improve their operational efficiencies and use internally generated funds to meet O&M and depreciation costs. Where service delivery requires huge capital investments, governments should offer grants or meet the investment costs. This is because in most developing countries where poverty levels are still high, full cost recovery tariffs are not feasible. Water utilities need to be granted autonomy, if they are to be effective. This minimises the problem of external interference, especially political patronage and allows the utility to exercise independence in managing its operations. Additionally, performance contracts with governments are critical in ensuring adherence to the set goals and honouring of respective obligations within the available resources and time frames.

The other important approach that works for utilities in developing countries is the adoption of a “private sector way” of conducting business. Utilities must operate on a commercial and viable basis. This not only helps to negate the business-as-usual attitude typical of most government enterprises, but generates a return from the services offered. The above approaches have worked and yielded positive results for NWSC and I believe they can work elsewhere.

In view of the existing global and country-specific water and sanitation challenges, it is worth noting that developing countries exhibit different and complex political, economic and social conditions. It is therefore imperative that the above mentioned solutions be tailor-made to suit the respective environment of each country, with the overall objective of enhancing better water and sanitation service delivery, hence the “home grown solutions”.

I would like to conclude by thanking our dear readers and customers who have continued to support us in our quest “to be one of the leading water utilities in the world.” We pledge to continue serving you better. I wish you all pleasant reading.

Editor's Note



Dr. Martin Kalibbala

Dear Readers, this issue of the Water Herald (WH) focuses on the theme, “water and sanitation service delivery: what works for developing countries?” It’s a timely one, in view of the seemingly insurmountable challenges that utilities in developing countries are facing, yet they are expected to continue providing timely and quality services to customers. In a constantly changing world, challenges are part and parcel of the management equation, especially those related to social, economic and societal responsibilities.

On top of this list of challenges, is the need to meet the water and sanitation Millennium Development Goals (MDGs), within the stipulated time. In order to reach the targeted MDGs for developing countries, it is essential that investments are appropriately allocated at every level. In terms of numbers, annual investments for water and sanitation in developing countries amounted to approximately 28 billion dollars – including the 14 billion for wastewater treatment – in the last twenty (20) years. Recently, the overall annual investment was reported to be slightly below 30 billion dollars. The donors are increasingly contributing a bigger share. Numerous studies have reiterated that the majority of donor aid is generally politically driven.

However, the costs estimates required to meet the MDG targets for water and sanitation in 2015 differ considerably, ranging from 9–30 billion dollars per annum. The most recent estimates on the progress towards reaching these MDGs revealed some very discouraging results: 55 countries were off track for the water target, while 74 for the sanitation target (UNDP, 2006). With the current rate of access, Sub-Saharan Africa would meet both the water and sanitation targets in 2040 and 2076, respectively.

The WH Editorial Team wanted to spark off a thematic debate towards improving water and sanitation service delivery in developing countries. Your contributions towards this debate are welcome. NWSC has contributed through a number of initiatives reported in the pages of this issue, for the period January–March 2011. The issue is thoughtfully designed to easily facilitate your contributions.

Enjoy this issue...

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NWSC's e-Payment Will Ease Bill Payments – Q&A



Dr. William T. Muhairwe, Managing Director–National Water and Sewerage Corporation (MD–NWSC) is always keen at introducing innovations that will ease and improve service delivery for NWSC customers. Being the key mastermind behind the e-payment system, in this question and answer (Q&A) piece, he clearly articulates how this innovation will ease water bill payments for our customers.

Question (Q): NWSC seems to be changing its customer service system. What is this all about? **Answer (A):** National Water and Sewerage Corporation (NWSC) is in the process of phasing out its cash offices and has introduced the new e-water bills payment systems, these include paying over the counter at partnering banks, MTN and M-Sente mobile money pay bill service, direct debit mandate and mobile banking options. However, branch offices remain open for other water related issues like customer complaints, reconnections, reporting leaks, bursts, no-water cases, etc.

Q. What is the difference between the old payment system and the new one? **A.** The difference is that with the old system, all customers have to queue up at our cash offices to pay their bills, but with the new e-water systems, customers have a variety of options in which to pay their bills, e.g., using mobile money pay bill service payments can even be made past midnight, for banks with interface, transactions are reflected in the NWSC system immediately the customer pays and the customer's account is credited within 24 hours. Through these systems, payment points for water bills are widely spread across all customer locations and as such, customers no longer need to travel all the way to National Water cash offices to pay their bills. So the new system is more convenient.

Q. What is e-water payment? **A.** e-water is the most convenient, efficient and easy way of paying water bills, through partnering banks, direct debit,

mobile banking, mobile money and we are yet to introduce scratch cards. At the bank, the "e-water" payment system is a simplified interfaced payment method in which transactions made in the banks are immediately reflected on the NWSC system. This simply means an NWSC official is able to check with our system and know that a certain customer has paid through the bank.

Q. In a nutshell, how does this system work? **A.** A customer presents his bill or customer reference number to the teller and upon payment, receives a receipt and an instant SMS on his/her phone confirming the transaction from both the bank and National Water. The customers' account is credited within 24 hours. Some of the interfaced banks include Bank of Africa, Centenary, Post Bank, Crane and DFCU bank. Other partnering banks have not yet interfaced but customers can still make their payments with them. These include: Standard Chartered (through mobile banking), Barclays, United Bank for Africa (UBA), ECOBANK, National Bank of Commerce, Citibank, KCB, Equity Bank, Diamond Trust Bank and Global Trust Bank. Others are quite eager to come on board.

Q. How is it generally done? **A.** The closure of cash offices is a phased approach, we have started with closing cash offices which have various neighboring banks and customers have been advised to pay their bills through these banks or any other partnering banks nearest to them. Other payment options include: signing direct debit mandate, mobile banking



L-R: Mr. Themba Khumalo (CEO, MTN Uganda) and Dr. William Muhairwe (MD-NWSC) exchange documents after signing the e-payment partnership in Kampala recently.

or use mobile money to pay bills. Cash offices in branches that don't have banks neighboring may not be closed soon until other payment options like scratch cards have been introduced.

Q. Why did you change to the e-water payment, yet the branch and areas cash offices were closer to the people? **A.** Actually the banks are more widely spread across all locations compared to our cash offices, therefore our customers don't need to travel all the way to our cash offices to pay their bills, nor do they need to first withdraw money from the banks in order to pay bills, but instead pay directly in the bank. And also, more channels of bill payment have been introduced like MTN and M-sente mobile money pay bill services, mobile banking and direct debit mandate. Through these payment channels, customers can pay their water bills at anytime, even on Sundays when our cash offices are closed.

Q. The payment of bills in the bank seems to be "frustrating" customers. What is being done to solve this problem? **A.** So far we have not received any major complaints from customers in the already closed territories, because it's not a new experience to pay in the bank; customers have already been paying through banks as a payment option. With the new

e-water, the experience is different especially for banks with interface, no need to fill in deposit slips, and you receive an instant notification SMS on your mobile phone, confirming the transaction made and your NWSC account is credited within 24 hours. The banks are also

widely spread so customers can go to any of the partnering banks nearest to them, or customers could use any of the other payment options.

Q. There are rumors that under the new system you have increased the water price per unit. What is your take on this?

A. This is not true; all the water tariffs remain the same. Within the new system comes instant billing and bills.

Q. Does that mean payment should also be instant or monthly like it has been? **A.**

Yes the payment is monthly like it has been only the payment system has been improved for convenience and ease of bill payment.

Q. Briefly explain how mobile money water bill payment is done

A. For MTN mobile money

1. You must be registered and should have mobile money on your phone.
2. Select Mobile Money from MTN Menu on your phone.
3. Under mobile Money select Pay bills.
4. Select NWSC.
5. Select region you belong to.
6. Type in your customer reference no and the amount.
7. You will get 2 instant confirmation messages of the transaction.

B. For M-Sente

1. Dial *500# from your UTL phone.
2. Type 5 to choose payments.
3. Type 2 to choose "pay NWSC."
4. Type the number against the area you live in.
5. Type the customer ref number on your water bill.
6. Type in the amount of money you wish to pay and press YES/OK.

Q. In case of water disconnection, we used to report to the cash offices branches for reconnection. What will happen with this system after disconnection and branch offices are closed? **A.** Branch offices are not closed it's

only the cash points or functions which are being phased out: eventually no branch office will be receiving payments. This means that only services like reconnections, leaks, bursts, no-water cases or any other water related issues will be reported and handled at our water offices like it has been, apart from payments.

- Instant SMS notification to customer.
- Reduced cases of disconnections of paid up customers
- Customers don't have to move around with money to pay their bills (withdraw from bank, then travel to NWSC to pay)
- Customers can pay from any branch / district.
- No filling of deposit slips in banks



L-R: Mr. Ronald Muwanguzi (Manager-Applications Development), Dr. William T. Muhairwe (MD-NWSC) and Mr. Elazzabi (MD-UTL Uganda) demonstrate to journalists how to effect e-payment via the M-Sente system.

Q. What are the benefits of this innovation to NWSC business? A.

- Upon implementation, it will give us time to concentrate on our core business and improve customer services
- Reduced costs in cash handling, i.e. insurance, cash in transit, security, etc.
- Faster reconciliations of payments,
- Improved customer satisfaction / trust

Q. Any other message to the public about this new innovation? A.

NWSC seeks to ease the lives of our customers because to us, they are kings. We are slowly phasing out cash offices in a bid to concentrate on customer care and the provision of water which is our core business. This is why we are partnering with dynamic organizations like UTL, MTN and Banks to make water bill payment easier. The e-water innovation is a real time bill payment solution that will go far in eliminating delays in updating customer accounts as well as the need to physically move to pay your bill or check your account balance.

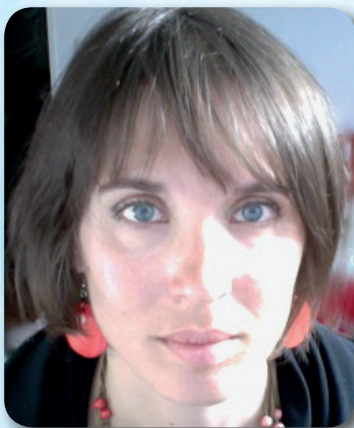
Paying water bills via e-water will be more convenient for our customers, now we have even rolled out spot billing system where NWSC officials take readings from your water meter and print out your bill on spot. We believe e-water will increase efficiency of paying for water, and hence enable clients manage their water bill payments much easier.

Q. What are the key benefits of e-water to our esteemed customers? A.

- Increased collective total numbers of Branches run by our partner institutions
- Longer opening hours for payments (some banks close at 9pm, weekends, 24hrs for Mobile money and M-Sente).
- Lower cost of bill payment (travelling, queuing, parking fees,)
- Payments in Banks/Telecom are reflected at NWSC in real time, hence customer accounts are updated much faster

WHAT DO YOU THINK

To comment on this article, please email up to 500 words to the editor at watereditorial@nwsc.co.ug or martin.kalibbala@nwsc.co.ug. A selection of significant comments received will be published in the next issue of the magazine. The Water Herald relies entirely on contributions sent in by NWSC staff, customers, guest writers and other stakeholders. Articles should be 1000 – 2500 words long, with adequate illustrations and references. Please contact the editor for further information.



Re-balancing Commercial and Engineering Activities: A Way Forward for NWSC?

by Marine Colon

This paper is based on a research project – June to July 2010 – for the fulfilment of a Masters in Public Administration, at the University of Paris. I am deeply indebted to National Water and Sewerage Corporation (NWSC) managers and staff – especially Dr. William T. Muhairwe – for opening their doors with trust, to enable be in conducting this scientific work. Some of the thoughts in this paper will cascade into a Doctoral research proposal and future collaboration. The PhD work is envisaged to further strengthen the nascent link between NWSC and the *Water For All* Chair of Montpellier, France – which funds my field research work. The study is geared towards contributing knowledge on management issues for water utilities in low to middle income countries.

New Public Management Reforms in the Water Sector



Today, nearly 1 billion people still have no access

to safe and reliable sources of drinking water, and half of the developing world lacks basic and decent sanitation services like improved latrines. 93 % of water utilities in developing countries – with ever-growing urban populace – are run by the public sector¹. Since the 1980s, many public organisations in Organization for Economic Co-operation and Development OECD countries – especially water utilities – have been reformed using the New Public Management (NPM) model, which is believed to make them perform better. According to Hood², the rationale behind the NPM is to “*lessen or remove differences between the public and the private sector and to shift the emphasis from process accountability towards a greater element of accountability in terms of results.*” This neoliberal doctrine is usually translated into practice in setting up control systems and incentive mechanisms to perform. Is this new management craze delivering the expected results?

This strengthens the nascent link between the NWSC and the *Water For All* Chair (which funds my fieldwork) training institute, which specialises in management issues for water utilities in low to middle income countries.

¹ Marin, P. 2009. Public-Private Partnerships for Urban Water Utilities, A Review of Experiences in Developing Countries, Washington DC: World Bank.

² Hood, C. 1995. The New Public Management in the 1980's : Variations on a Theme, Accounting Organizations and Society, Vol. 20, N°2/3, pp. 93-109

Have the NPM Reforms Worked in Uganda?

Our study sought to explore the impact of NPM reforms in the urban water sector in Uganda. For the past ten years, NWSC's management has followed the doctrine of NPM, attempting to manage this enterprise like a private company. The management style has been result-oriented, using incentive mechanisms and performance contracts as the main drivers of performance. Extensive literature presents the managerial reforms undertaken in NWSC as successful and being a decent alternative to privatisation³. Our research study sought to focus on public management issues within the public organisation.

Methodology

We chose to conduct an in-depth case study on NWSC, which involved observation at the work place (hosted by the M&E unit at Head Office), interviews of 39 members at Head Office, Kampala Water and Entebbe Area, and study of documentation on the history of the organisation and data on activity and performance. We also took part in the annual negotiation workshop in Tororo. In addition, we interviewed other key stakeholders, i.e. Commissioners at the DWD, member of the Union, GIZ and KfW consultants. This study proved to be a worthwhile learning experience.

Paper Outline

The paper highlights the core findings of the research. It seeks to answer this question: "What is the impact of incentive mechanisms in NWSC?" After a concise introduction and definition of incentive mechanisms in NSC terms, we then look at the evolution of the NWSC's performance between 1995 and 2010. Thereafter, we analyze the observed trends by providing a number of logical explanations. Our analysis reveals some limits in the incentive mechanisms to perform and leads to some key recommendations.

How do Incentive Mechanisms look like in NWSC?

The reform of the Ugandan urban water sector is embodied by emblematic management tools, which are performance contracts. These three-year contracts have been signed since 2000, between the public operator and the Government. They set performance incentives and targets to be achieved. The targets are meant to be part of the NWSC's Corporate Plans and translated into operational goals in the internal performance contracts, e.g. the Internally Delegated Area Management Contracts (IDAMCs) since 2004. The incentive mechanisms attached to internal performance contracts – signed between the Head Office of NWSC and the 23 Areas since 2004 – are presented as having greatly contributed to performance improvement⁴.



In theory, incentive mechanisms can be of four types, depending on two variables: who is the recipient of the incentive mechanisms (either an individual or a group), and the type of incentive used (either monetary or subjective⁵). In NWSC, the most visible incentive mechanism is the IDAMC, which is a monetary collective incentive mechanism. The higher the level of performance reached by the area, the higher the monetary incentive shared among the entire staff of a particular Area. The level of performance is assessed monthly on the basis of a set of 23 performance indicators. Since their introduction, eight performance indicators play a paramount role in the calculation of the incentive fee, stressing the reduction of losses (cash operating

3 see for instance : Baietti , A. & Kingdom W., & Van Ginneken M. 2006. Characteristics of Well-Performing Public Water Utilities, Water Supply and Sanitation Working Notes, n°9
Lobina, E. 2000. Hall David, « Public Sector Alternatives to Water Supply and Sewerage Privatisation: case studies », International Journal of Water Resources Development, vol 16, n°1, p. 35-55

4 See for instance: Mugisha, S., & Berg, S. V., & Muhairwe W. T. 2006. Using Internal Incentive Contracts to Improve Water Utility Performance: The Case of Uganda's NWSC.

5 A subjective mechanism is a concept inspired by Chester Barnard's "The Functions of the Executive", Cambridge (1938). It gathers any other type of incentives besides monetary the organisation can offer to a worker that justifies his sticking to the organisation.

margin, working ratio, NRW, number of inactive connections, total arrears) and the maximisation of revenue (billing, collection, number of active collection). The NWSC incentive mechanisms have been stable, stressing the role and responsibilities of lead partners (managers).



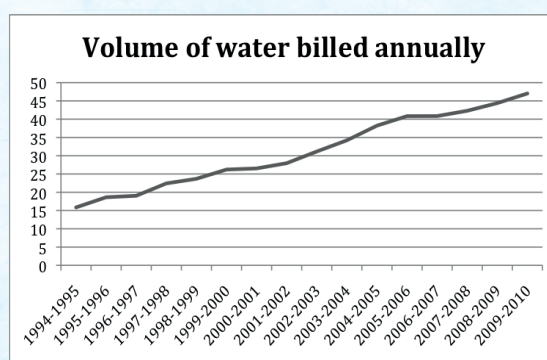
These incentive mechanisms are in fact complementing another more complex set of incentive mechanisms. In line with Chester Barnard's work (1938), the study highlights the fact that the organisation provides other incentives to staff, which are both individual and collective. Individual incentives aim at limiting the risk of free-riding. The Ken Blanchard "one-minute" management program set in 2003, encourages praising or reprimanding individuals at work, with the aim of instantly aligning their actions to organisational goals. Less formal tools could be considered as individual incentives, linked with working conditions, human resources management policy (career evolution, job security), social status, and a sense of belonging (water family).

An internal benchmarking mechanism was set in the late 1990s, seeking to enhance competition between the Areas. Managers of the best-performing areas are rewarded every year – during formal ceremonial gathering graced by: Area managers, Top Management, local authorities' representatives, the Union and NWSC Board Members. The managers of the worst performing areas dread this event, because of the fear of being shamed. This incentive mechanism has a significant impact on the managers' motivation. Finally, the new corporate culture, which promotes a new image of NWSC staff, pushes individual or collective behaviours towards commercial activities. Each NWSC staff member – at his/her level – has to draw a solid link

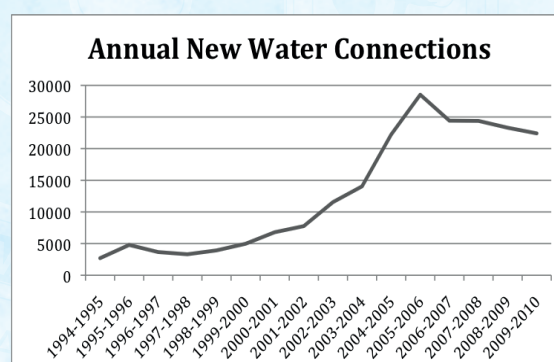
between the various incentive mechanisms and his/her daily activities.

What is the impact of incentive mechanisms on NWSC performance?

In our attempt to understand the impact of incentive mechanisms on NWSC, we started by looking at their impact on its performance. A 15-year period was covered in order to identify any trends in the measured performance since the introduction of incentive mechanisms. Three graphs are presented here, reporting the performance of the NWSC for the volume of water billed, number of new water connections and NRW. The data were collected from the annual reports and corporate plans.



Graph 1 Amount of water billed between July 1994 and June 2010 (million of m3) (source: NWSC)



Graph 2 New water connections done every year between July 1995 and June 2010 (source: NWSC)

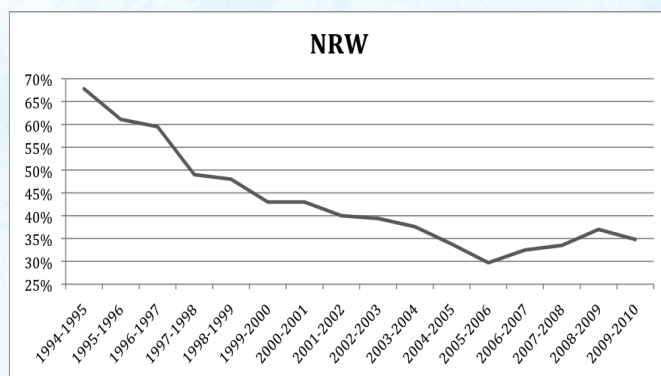
The above graphs depict the following:

- All data, as illustrated in the graphs, show a generally positive trend in the performance of NWSC.
- From Graph 2 and numerous data collected from the field, it can be deduced that incentive

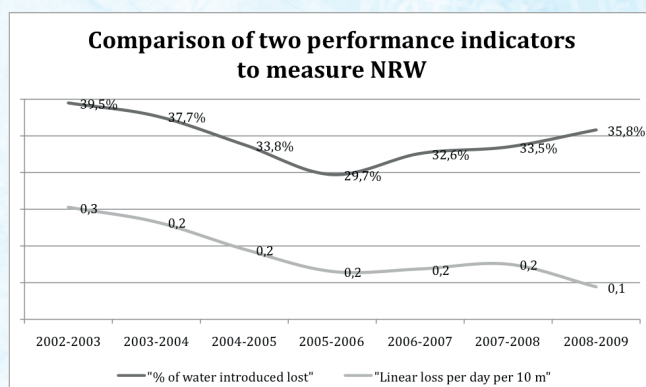
mechanisms seem to have impacted on commercial and financial indicators.

- Graphs 1 and 3 contrast with this previous observation by showing no clear break in the trend of evolution of the performance for the chosen indicators, i.e. the volume of water billed and NRW.
- Graphs 2 and 3 reveal a slight decline of the organisation's performance on the number of new connections, plus NRW since July 2006.

Given the nature of these observations, it is most likely that the impact of incentive mechanisms is not exactly the one expected. Although they focused on improving the performance on the quoted performance indicators, with a constant priority given to NRW, the NWSC starts facing difficulties in keeping up the momentum of performance improvement.



Graph 3 NRW in volume between July 1994 and June 2010 (source: NWSC)



Graph 4 : Comparison of the evolution of NRW captured by two different performance indicators between 2002 and 2009

Why incentive mechanisms to perform seem to have had no obvious impact on performance?

1. The way of measuring performance might not be accurate enough

The choice and design of performance indicators are very crucial here. In the case of NRW, which is the indicator on which the organisation faces most difficulties, the chosen performance indicator might not be the most adequate. The one chosen – which is the percentage of the volume of water introduced in the network that is lost, either through commercial or physical loss – does not take into account the evolution in the length of piped network and number of water connections, which are known to increase physical losses. Many water utilities in the world have resorted to another indicator to measure NRW, factoring in linear losses of water (in m³ per km per day), which is considered as more accurate. Graph 4 below illustrates the difference between both performance indicators. With the current indicator used, the curve (the darker one on the graph) gives the impression that since 2006, NRW has been increasing. However, the NRW captured by the linear losses of water indicates that the water losses have not stopped decreasing since 2002 (besides the stagnation period between 2006 and 2008).

Not only performance indicators might distort reality, they also simplify it, and might not paint an accurate picture. Indeed, some dimensions of performance might not be measured. For instance, there are currently no performance indicators on asset management, which highlights a key weakness of NWSC which requires urgent redress.

2. Incentive mechanisms from IDAMCs might have limited effect due to the lack of focus on asset management and strategic planning

The limited impact of IDAMCs on performance indicators such as NRW may be explained by the fact that these incentive mechanisms do not solve problems of coordination, which brings inefficiency in the organisation of the work, neither do they help to define the right strategies to improve performance. Areas concentrate on their daily tasks of satisfying customers and meeting financial targets. Area managers have little time to develop planning and asset management strategies.

At the Head Office level, a long-term investment

plan has been drafted, which concentrates on large projects. There might be a need to develop a function of asset planning and management strategies at Area level, to address the need to optimise both the existing infrastructures and their future developments. Addressing this gap might provide a key breakthrough in the fight against NRW. Areas are pushed to cut down on their spending, while keeping focus on satisfying customers. Therefore, they might not invest enough time in asset management, which might partly explain the increasing no-water cases and physical losses.



On top of that, two parties argue about the strategies towards reducing water losses. One party advocates for the need to largely investment in infrastructures management, while the other one calls for the allocation of financial resources to suppress commercial losses (thefts). The lack of consensus might slow down key improvements.

3. Isn't there competition between incentive mechanisms?

The study highlights the fact that NWSC staff are not only motivated by monetary incentives, but by subjective incentives, as depicted by Barnard (1938). The impact of subjective incentives may shadow the impact of the incentive mechanisms associated with the IDAMCs. Firstly, because many staff – including top managers – say they do not understand how the IDAMC incentives are calculated, but tend to stick to key goal of satisfying customers and minimal spending. The researcher suggests that this reveals that the new corporate culture and the style of leadership seem stronger drivers to change. For instance, on the ground, work is planned to comply with customer complaints, especially the response to leakages and repairs



4. Whatever the design of incentive mechanisms, there might be limits to performance improvements due to the organisational environment

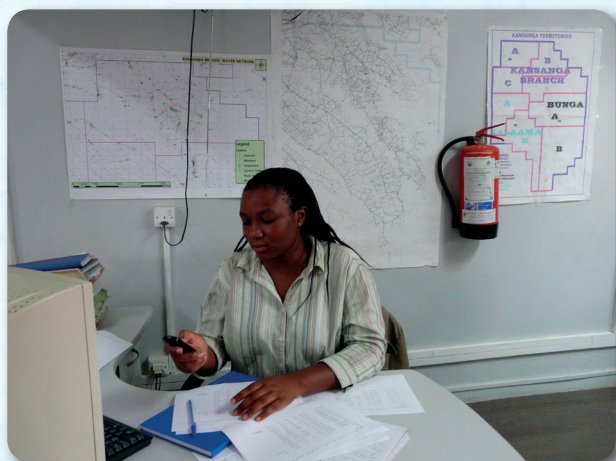
The NWSC evolves in an environment, which keeps evolving. This environment is natural (the Lake Victoria, the hills etc), artificial (the city) and human (customers, suppliers, funding agencies, government etc). NWSC does not have control over the political and natural “evolution” of her environment. This environment is very challenging: deterioration of the quality of the raw water in Kampala, poverty, increasing urban informal settlements, diversification of funding agencies with different demands, increasing governmental will to control NWSC. These might limit the actual impact of additional efforts made by NWSC staff to improve

their performance. Nevertheless, the NWSC should also question the impact of its action on this environment. For instance, no substantial investment is made in sanitation measures, which impacts on the quality of water resources, which in turn has an effect on the cost of raw water treatment.

The risk: an erosion of motivation and a deterioration of assets?

There might have been a routine effect combined with the difficulty of sustaining the achievements for reaching higher levels. All interviewees express with emotions the great excitement and hope which made them feel part of the NWSC when the IDAMCs were introduced. However, since 2006, the organisation has been struggling with NRW, staff members have started to receive a reduced share of the incentives. Indeed, according to the interviewees, for the same amount of effort they get less recognition. This has triggered a feeling of de-motivation. In addition, there are signs of ill planning, infrastructure design and lack of asset management strategies. Without these, the NWSC's performance is bound to decline in the long run.

“Seeds for the future” have been sown and need to be watered



Our study showed that although the internal contractual tools with their incentive mechanisms have brought positive changes (decentralisation, new corporate culture, capacity building, knowledge management, and corporate image), the NPM management model reaches a point where more changes are needed for further improvement, and to mitigate two major risks: (i)

staff de-motivation, and (ii) asset deterioration. Good seeds have been sown and need to be watered to grow. I encourage NWSC, who has made tremendous improvements in commercial activities, to build on its change management culture by re-balancing her focus on commercial activities coupled with more engineering activities (asset management). The efforts in resolving the problem of NRW necessitates: a study to help the organisation to define the right strategies, an adequate staffing at area level for asset management strategies, and to pursue efforts to seek proper coordination between Areas and Head Office in terms of asset management. These recommendations are in line with some resolutions taken during the IDAMC III evaluations and negotiations in Tororo.

Additionally, there is a need to check the consistency of different incentive mechanisms, with the existing hierarchical and traditional institutions, which also condition individual behaviours. Also, there might be need to re-think and re-cast the choice of performance indicators (do they measure the right dimensions of activities?), distinguishing between the use of performance indicators: to communicate, take decisions and make staff focus on specific tasks, through incentive mechanisms.

Finally, incentive mechanisms should be re-designed, so that the performance measurement systems become sensitive to the efforts made by staff at all levels. This might require identifying and striking the right balance between individual, collective, monetary and subjective incentives.

The author is a French water engineer and civil servant in the Ministry of Agriculture. She is currently pursuing a PhD titled, “paradigm shift in water utilities from performance to sustainable development”.

Water and Sanitation Service Delivery: What Works for Developing Countries?

by Cissy Nawatene

The right to accessing water and sanitation is crucial for leading a dignified human life and a basic human right. Water is an abundant substance on earth and delivering it – safe and clean – is a moral imperative. Unfortunately, developing countries are facing numerous challenges in delivering safe, clean water and basic sanitation services. This is greatly attributed to the inability to adapt to the science of maintaining it clean and free of diseases in a hazard free environment, caused by their low economic levels. In service delivery for developing countries, the following are some of the factors that ought to come into play:

Community engagement – A decision to involve the community at execution stage will clearly work for developing countries in the safe delivery of water and sanitation services. Community engagement creates a distinctive opportunity and strategy, which ought to be a priority for overall water and sanitation service delivery priorities to meet the challenge of delivery to informal settlements. Unless beneficiary communities are engaged in understanding the dangers and hazards associated with lack of or inadequate delivery, attempt to deliver basic water and sanitation services will not meet local desires or be credi and credibly well appreciated by informal settlement communities.

Capacity building – Have developing countries thought of capacity building and how well it could work in their environment? This is the practice by which organizations, institutions, groups and societies increase their abilities to execute core functions, solve problems, accomplish objectives, appreciate and deal with their development needs in a sustainable manner. Individuals, institutions and societies need to have an ability to perform functions, solve problems, set and achieve objectives inefficiently. Capacity building in developing

countries will therefore include aid programmes like training budgets for community-based and local government workers involved in areas such as water, strengthening public sector delivery – with adequate staffing – and the utilization of media technologies such as e-learning and community radio.

Finance options and management – This is an area developing countries must take keen interest to enhance effective service delivery. Mechanisms and decisions that power financial viability include the tariff structure, subsidies, investment choices, credit and debit control policies, and revenue management. In the same respect, activities like investment planning, raising grant and loan funds, budget, raising income, billing and revenue collection and financial reporting are of great importance for any developing country to achieve their targets in safe water and sanitation service delivery. Adequate investments need to be channeled in water and sanitation infrastructure, to ensure access to services at all levels of municipal, district and government.

Investment in sustainable infrastructure – In developing countries, sustainable investment is still low, yet its one of the prevalent challenges facing developing countries. The design of new infrastructure, re-design, rehabilitation, operation and maintenance, rehabilitation or optimization of existing infrastructure, which is consistent with the principles of urban sustainability and global sustainable development, will contribute to safe delivery of water.

Developing countries need to spot new infrastructure projects and implement them through probably project cycles with much attention accorded to institutional, financial, environmental, hygiene and asset management – including the replacement of assets at the end of their life – and putting in place preventive maintenance measures to ensure that

existing infrastructure are kept in good working order. However, planning for sustainability demands not only technical competence, but also community participation in identifying, prioritising and planning new infrastructure projects.

of services to all and infrastructure expansion in urban and peri-urban areas. These reform projects will initiate better institutional frameworks that lead to increased autonomy, accountability, customer orientation, support performance and operating contracts between utilities and public agencies and

assist in designing micro-finance approaches as a strategy for increasing household connections to the urban poor.

In conclusion, while we debate and ponder about what works for developing countries – in terms of water and sanitation service delivery – we must remember that poor water and sanitation service delivery is greatly attributed to low economic stature, which limit their ability in monetary and technological terms. Developing countries also face other challenges that need to be concurrently addressed, namely (i)

adopting and adapting science and technology to suit their local systems, (ii) low populace income levels leading to unwillingness and poor abilities to pay for water and sanitation services, (iii) poor institutional capacity and set-up caused by poor governance systems, and (iv) corruption.



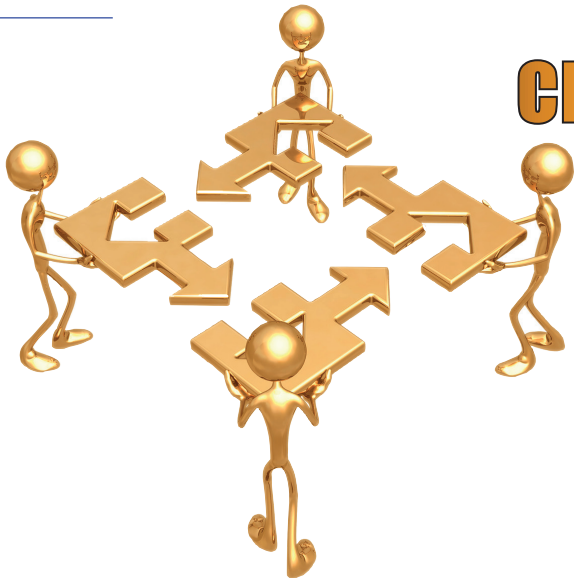
Water service delivery to the urban poor in Kisenyi - Kampala

Encouragement of Innovation – There is dire need to encourage innovation in the non-technical spheres, to enable the safe delivery of clean safe water and sanitation. We need to identify and implement reform initiatives that will fuel a financially viable and sustainable environment for improved quality

**WHAT
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THINK?**



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Characteristics of Highly Productive Teams

Charles Batchelder was a machinist. John Kruesi was a clockmaker. Ludwig Boehm was a glassblower. Francis Upton was a mathematician. Together, they shared a light bulb moment with the inventor Thomas Edison. After all, the commercially viable incandescent light bulb was the product of an entire team, not the single inventor we were taught in primary school. This team, during that memorable night in Menlo Park knew their bulb would light, but had no idea how long it would stay lit. In fact, research studies on teamwork depict that there are no great leaders without great teams.

For the past couple of decades, many studies on the drivers of human performance have been churned out. In their interesting research study which cascaded into a recently published book dubbed, "The Orange Revolution" – with results of 350,000 sampled individuals to measure the characteristics of extremely productive teams – Gostick and Elton (2010) found a lot of what many people had theorized in their data. Here are some of their findings about four essential qualities that might change the way one leads, or participates on their team work:

Great teams always have a noble cause. The great teams they studied all had a noble cause, and, more than that, they had extreme clarity about that cause. When they interviewed 10 people on a great team to list their *raison d'être*, all of them would use the same language, i.e., "we make raving fans of our patients and their families," or "we treat our customers like heroes." How would your team fare with this exercise?

Effective teams drive engagement. Engaged employees are those who care about the organization, and are willing to give extra effort, among others things. This research shows that

the number of engaged employees in an organization increases by a whopping 11 % when people feel they are part of a motivating team, who receive regular peer-to-peer recognition and understand how the work of their group affects the bigger organizational picture.

Their performance is driven by team, not company, loyalty. Here's one of their biggest findings, and CEOs hate it: People are more loyal to their teams than to their companies. For instance, we love our countries, but aren't we as individuals more loyal to our families? It's within human nature to band together in small teams for support and encouragement. Great leaders know this and don't fight it, but rather capitalize on it to enhance performance. They keep teams together longer – it's a fallacy that team productivity drops off after a few years – and they even move great teams together instead of picking off stars and moving them.

Great teams simplify. The best teams live by sets of simple rules and hold each member accountable for honoring those rules. Gostick and Elton (2010) culled the various rules down into the three that were most common: Wow, No Surprises and Cheer. In short, the members of great teams commit to being world-class with every interaction with clients and with one another. They believe in open communication with no surprises, and they agree to root and cheer for one another, with a healthy dose of recognition for great work.

This may seem elementary, but it might be time to ask your team, and yourself, the following basic questions which could help reveal your team's potential for breakthrough results: Who on your team are you cheering for? Who on your team cheers for you? Who on your team can't you cheer for and why? Who isn't cheering for you? Those questions may lead to some tough conversations among your team mates. But remember, no team performs in the "dark".

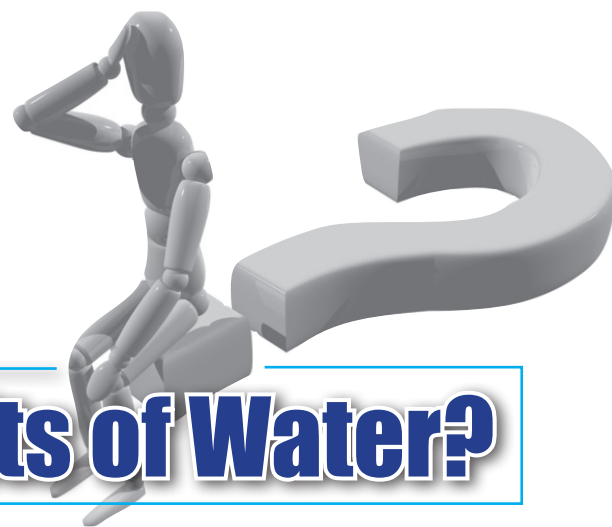
extracts from www.forbes.com

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Did you know?



the Health Benefits of Water?

by Martin Kalibbala

1. Adequate quantities of water in the body aid in digestion and prevent constipation. It also leads to increased energy levels. Medical experts say that the most common cause of daytime fatigue is usually mild dehydration. Additionally, it aids in maintaining healthy body weight by increasing metabolism and regulating appetite. Drinking adequate amounts of water can decrease the risk of certain types of cancers, including colon cancer, bladder cancer, and breast cancer.
2. Water is the primary mode of transportation for all nutrients in the body and is essential for proper circulation. It naturally moisturizes the skin for proper cellular formation underneath layers of skin, giving it a healthy, glowing appearance. The right drinking water therapy can significantly reduce joint, pain, headaches and back pain.
3. Drinking too much water too quickly, can lead to water intoxication. Water intoxication occurs when water dilutes the sodium level in the bloodstream and causes an imbalance of water in the brain. Water intoxication is most likely to occur during periods of intense athletic performance. By the time a person feels thirsty, his or her body has lost over 1 % of its total water amount. The weight a person loses directly after intense physical activity is weight from water, not fat.
4. Water is the most essential element, next to air, for our survival. Water is everywhere, yet most people take it for granted. Water makes up more than two thirds of our weight. Our brain, blood, and lungs consist mostly of water. Blood is 83 % water, muscles are 75 % water, the brain is 74 % water, bone is 22 % water.
5. Clean, healthy drinking water is essential to a child's proper mental and physical development. It is therefore essential to ensure that children drink clean and safe water. For instance, in the United States alone, lead in drinking water contributes to 480,000 cases of learning disorders in children, per annum. Over 75 % of residents receive their water from public water facilities. The remaining percentage gets their water from either private entities or other sources. Additionally, pregnant women ought to drink pure water without lead because it can cause severe birth defects.
6. Drinking impure, contaminated water is the leading cause of epidemic diseases in developing countries. Several types of cancer can be attributed to the presence of toxic materials in drinking water. There are more than 2100 known drinking water contaminants that may be present in tap water, including several known poisons.
7. Water promotes healthy function of the liver and kidneys. Water is absolutely essential for weight loss and fitness programs. Water regulates metabolism and helps to keep cellulite at bay. Water assists in better digestion and higher energy levels. Water reduces the risk of flu. It also reduces tooth decay and hyperactivity in children, and forms the base for saliva. Water is a must for baby formula, forms the fluids that surround the joints, and regulates body temperature, as the cooling and heating is distributed through perspiration. Water helps to alleviate constipation by moving food through the intestinal tract and thereby eliminating waste.

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Areas Performance Score Card, October – December 2010

by Godfrey S Arinaitwe and Beat Nabacwa

Area	October Performance						November Performance				December Performance			
	NRW	WR	COM		Incentive Earned ('000' UShs)	NRW	WR	COM		Incentive Earned ('000' UShs)	NRW	WR	COM	
			(‘000 UShs)					(‘000’ UShs)					(‘000’ UShs)	
Kampala	Actual	40.8%	52.0%	2,930,205	184,577	37.9%	47.6%	3,710,055	238,007	40.9%	54.6%	4,656,869	204,051	
	Target	39.0%	54.9%	3,039,566	395,832	39.0%	54.9%	3,039,566	395,832	39.0%	54.9%	3,039,566	395,832	
Jinja	Actual	27.3%	42.2%	392,009	0	25.6%	37.0%	431,335	11,831	27.5%	39.7%	563,615	12,688	
	Target	18.0%	42.1%	473,637	46,536	18.0%	42.1%	473,637	46,536	18.0%	42.1%	473,637	46,536	
Entebbe	Actual	10.2%	40.8%	309,000	8,496	14.7%	41.7%	265,574	11,945	15.5%	42.5%	247,582	14,108	
	Target	13.5%	47.7%	320,965	39,683	13.5%	47.7%	320,965	39,683	13.5%	47.7%	320,965	39,683	
Mbale	Actual	7.9%	55.8%	65,237	18,563	7.7%	56.4%	118,412	15,061	7.4%	56.3%	215,832	21,406	
	Target	7.5%	68.7%	94,995	33,486	7.5%	68.7%	94,995	33,486	7.5%	68.7%	94,995	33,486	
Mbarara	Actual	11.9%	46.1%	92,383	8,002	10.6%	50.3%	182,443	9,649	11.8%	51.7%	195,794	10,222	
	Target	11.5%	53.8%	237,555	37,761	11.5%	53.8%	237,555	37,761	11.5%	53.8%	237,555	37,761	
Masaka	Actual	35.4%	69.2%	31,651	12,261	33.0%	79.0%	59,836	3,107	36.6%	76.9%	178,549	15,335	
	Target	18.0%	77.1%	50,888	16,835	18.0%	77.1%	50,888	16,835	18.0%	77.1%	50,888	16,835	
Tororo	Actual	11.8%	96.9%	-6,435	0	9.0%	82.7%	17,178	3,399	8.6%	88.2%	25,157	3,450	
	Target	8.0%	86.4%	22,117	11,558	8.0%	86.4%	22,117	11,558	8.0%	86.4%	22,117	11,558	
Soroti	Actual	16.4%	79.5%	8,869	10,215	17.3%	78.2%	41,182	1,497	13.0%	74.9%	33,621	3,240	
	Target	14.0%	71.8%	39,420	12,180	14.0%	71.8%	39,420	12,180	14.0%	71.8%	39,420	12,180	
Arua	Actual	13.4%	84.2%	626	1,382	11.2%	79.3%	30,331	4,496	7.7%	83.7%	25,317	8,434	
	Target	9.0%	86.5%	18,410	11,373	9.0%	86.5%	18,410	11,373	9.0%	86.5%	18,410	11,373	
Gulu	Actual	9.0%	77.4%	-19,525	0	9.0%	85.3%	59,589	0	9.0%	90.9%	28,816	0	
	Target	7.5%	59.4%	78,006	12,275	7.5%	59.4%	78,006	12,275	7.5%	59.4%	78,006	12,275	

Bushenyi	Actual	22.9%	112.9%	-14,549	4,031	19.2%	116.6%	-4,070	4,015	20.1%	125.6%	-5,646	4,164
	Target	14.0%	117.6%	-6,306	7,759	14.0%	117.6%	-6,306	7,759	14.0%	117.6%	-6,306	7,759
Kabale	Actual	8.4%	72.5%	21,945	6,143	10.5%	70.2%	25,862	6,143	14.4%	82.3%	-2,170	4,698
	Target	8.0%	81.7%	21,243	9,196		81.7%	21,243	9,196		81.7%	21,243	9,196
Lira	Actual	11.6%	76.3%	15,534	1,580	14.3%	74.6%	43,605	0	14.2%	66.9%	113,573	14,575
	Target	10.0%	72.0%	57,855	15,701	10.0%	72.0%	57,855	15,701	10.0%	72.0%	57,855	15,701
Fort Portal	Actual	27.3%	64.4%	25,276	2,613	30.3%	70.3%	48,903	2,653	17.1%	60.9%	87,702	4,131
	Target	15.0%	66.1%	50,433	14,253	15.0%	66.1%	50,433	14,253	15.0%	66.1%	50,433	14,253
Kasese	Actual	21.7%	63.1%	36,631	5,020	16.0%	61.0%	40,383	4,919	15.9%	52.4%	22,936	4,750
	Target	16.0%	63.6%	35,816	8,893	16.0%	63.6%	35,816	8,893	16.0%	63.6%	35,816	8,893
Hoima	Actual	5.9%	103.7%	5,743	2,223	10.8%	131.2%	14,928	1,630	12.4%	106.3%	-12,060	657
	Target	13.0%	96.4%	11,329	8,361	13.0%	96.4%	11,329	8,361	13.0%	96.4%	11,329	8,361
Lugazi	Actual	23.9%	67.9%	9,403	3,536	23.6%	129.1%	-6,942	3,201	26.8%	113.0%	-7,369	3,405
	Target	22.0%	138.3%	-7,907	6,393	22.0%	138.3%	-7,907	6,393	22.0%	138.3%	-7,907	6,393
Masindi	Actual	7.7%	80.8%	-2,508	0	8.3%	83.1%	-6,338	0	11.8%	78.1%	66,283	1,306
	Target	9.0%	68.9%	33,910	11,171	9.0%	68.9%	33,910	11,171	9.0%	68.9%	33,910	11,171
Mubende	Actual	13.4%	86.1%	-12,813	3,713	13.1%	73.3%	12,542	5,036	12.0%	96.5%	-6,141	3,215
	Target	14.0%	110.6%	57,502	6,625	14.0%	110.6%	57,502	6,625	14.0%	110.6%	57,502	6,625
Iganga	Actual	24.9%	80.8%	10,195	5,504	8.9%	69.8%	11,886	4,757	18.5%	76.8%	22,372	5,555
	Target	25.0%	87.6%	15,180	7,617	25.0%	87.6%	15,180	7,617	25.0%	87.6%	15,180	7,617
NRW – Non-revenue water, WR – Working ratio, COM – Cash operating margin, UShs – Uganda Shillings													

October 2010 Performance

Non-revenue Water (NRW):

The October 2010 performance indicates that only Five Areas achieved NRW targets. These were Entebbe, Hoima, Masindi, Mubende, and Iganga. All the other areas fell short of their targets.

Working Ratio (WR):

Seven Areas were unable to achieve their Working ratio targets. These include: Jinja, Tororo, Soroti, Gulu, Lira, Hoima and Masindi. All other Areas achieved their targets.

Cash Operating Margin (COM):

With regard to cash operating margin, only Kabale and Kasese Areas were able to achieve their cash operating margin targets. All other Areas failed.

Incentives Earned:

All Areas earned incentives in the month of October 2010 except Jinja, Tororo, Gulu and Masindi. This was because they failed to achieve their minimum standards for Cash Operating Margin (COM). All other Areas earned incentives with Kampala earning 184M, Mbale 18M and Masaka 12M. In this month of October, a total of UGX 277M was transferred to Areas as incentives earned.

November 2010 Performance

Non-revenue Water (NRW):

During the month of November 2010, most of the Areas failed to achieve their NRW targets except Kampala, Mbarara, Kasese, Hoima, Masindi, Mubende and Iganga.

Working Ratio (WR):

Seven Areas failed to achieve their working ratio targets during the month of November 2010 and these include Masaka, Soroti, Gulu, Lira, Fortportal, Hoima and Masindi. All other Areas achieved their targets.

Cash Operating Margin (COM):

Kampala, Mbale, Masaka, Soroti, Arua, Bushenyi, Kabale, Kasese, Hoima and Lugazi are the Areas that achieved their COM targets. The other Areas fell short of their targets.

Incentives Earned:

All Areas managed to receive substantial incentives during the month of November 2010 except Gulu, Lira and Masindi. A total of UGX 331M was earned as incentives by Areas with Kampala Water earning UGX 238M.

December 2010 Performance

Non-revenue Water (NRW):

The performance for December 2010 indicates that only Mbale, Soroti, Kasese, Hoima, Mubende, and Iganga achieved their NRW targets. All other Areas fell short of their targets.

Working Ratio (WR):

Seven Areas failed to achieve their working ratio targets and these include Tororo, Soroti, Gulu, Bushenyi, Kabale, Hoima and Masindi. All the other Areas managed to achieve their targets.

Cash Operating Margin (COM):

All Areas with the exception of Entebbe, Mbarara, Soroti, Gulu, Kabale, Kasese, Hoima, and Mubende achieved their cash operating margin target during this month.

Incentives Earned:

Only Area failed to qualify for any incentives during the month of December 2010. All other Areas managed to receive a total of UGX 339M as incentives during the month with Kampala earning UGX 204M, Mbale UGX 21M and Lira & Entebbe UGX 14M.

Overall Performance.

Non-revenue Water (NRW):

Hoima Mubende and Iganga are the only Areas that achieved their NRW targets through the period. Factors contributing to this performance include calibration of meters, reduced response to leaks and bursts and increased water sales.

Working Ratio (WR):

Most of the Areas have improved their working Ratio over the period due to increased billing through new connections and controlling costs. Nine Areas achieved their targets throughout the period and these were Kampala, Jinja, Mbale, Mbarara, Arua, Kasese, Lugazi, Mubende, and Iganga.

Cash Operating Margin (COM):

Most of the Areas improved throughout the period due to collections from government and also through minimising expenditure. However there is need for more efforts in reducing Arrears and improving collection efficiency.

Incentives Earned:

Areas have progressively earned incentives over the period except Gulu Area which didn't earn any incentive due to failure to achieve Minimum Standards for some performance indicators like COM. For the period October-November 2010, a total of UGX 948 Million was transferred to Areas as Incentives earned.

Lake Victoria: How Reliable is it for Water and Power Utility Businesses?

by Martin Kalibbala

retention period of about 120 years.

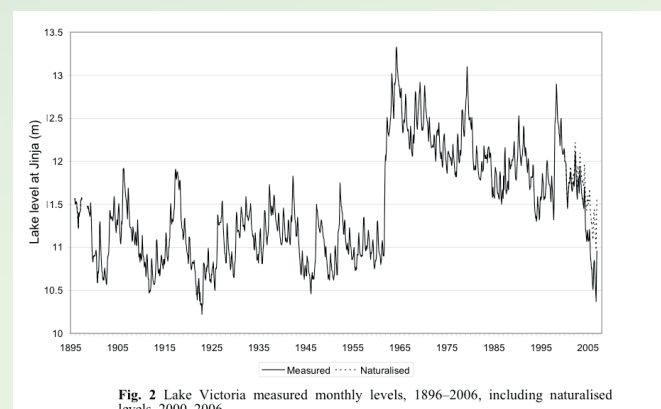
Background

With a surface area of 68,800 square kilometres, Lake Victoria is Africa's largest lake, and it is the largest tropical lake in the world. It is the world's second largest freshwater body, by surface area. In terms of volume, it contains about 2,750 cubic kilometers of fresh water. Lake Victoria receives most of its water from direct precipitation and from thousands of small streams. The largest stream inflow emanates from River Kagera. There are two out-flowing tributaries namely, (i) Victoria Nile, which flows out at Jinja, Uganda on the northern shores, and (ii) River Katonga, which flows through Lukaya – on the western shores, and connects to Lake George (Figure 1).

The Lake occupies a shallow African depression with a maximum depth of 84 metres – average depth of 40 metres – and has a catchment area of 184,000 square kilometers. It's endowed with a shoreline of 4,828 kilometres, with islands constituting 3.7 % of this length. Among the three East African countries, it is divided as follows: Kenya (6 %), Uganda (45 %) and Tanzania (49 %). Lake Victoria has a water

Lake Victoria's Deteriorating Hydrological Water Quality Conditions Vs Utility Businesses

Since 1959, the efflux of Lake Victoria – the second largest freshwater lake in the world – has been under serious human measurement and surveillance, through the Owen Falls Dam, located at Jinja, Uganda. The rationale behind this venture was to partly monitor and use the data to analyse the lake hydrology, in a bid to enhance sustainability.



Numerous studies depict that the lake is at its lowest level since 1951 (Figure 2). Without doubt, the receding shoreline is likely to affected water supply systems, fisheries, boat operators, farmers, among

others. Additionally, simulations of future climate change scenarios depict that current trends are expected to result into drier conditions, lower lake levels, poor vegetation cover, and lower downstream river flows, which will make it increasingly difficult for Victoria Nile dams to produce their projected power outputs. These impacts thus challenge the single-minded development of hydropower dams on the Victoria Nile for Uganda's electrical needs – a plan that has had considerable backing from the development partners like the World Bank.

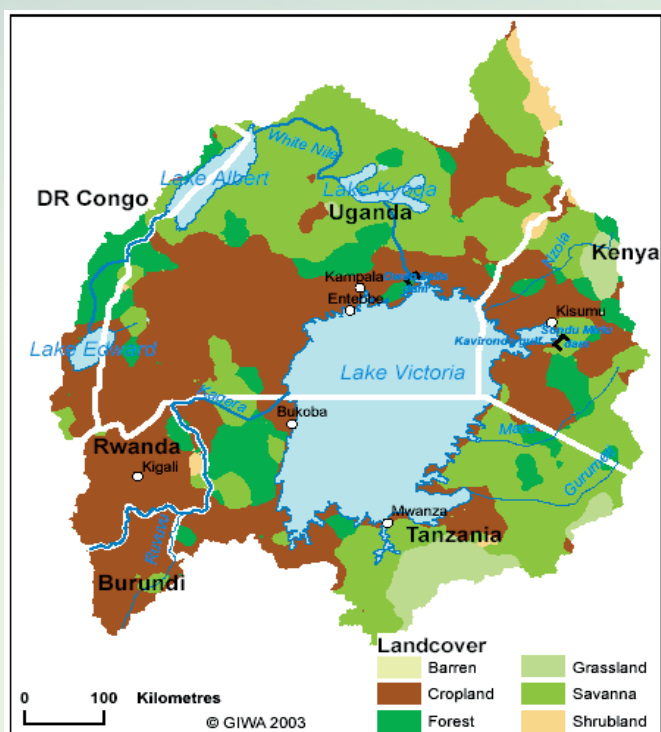


Fig. 1: Lake Victoria of Eastern Africa

About 55 % of the lake's drop during 2004–2005 is apportioned to the Owen Falls dams releasing excessive amounts of water from the lake (the rest of the 1.2 meter drop is due to drought). The dams have been releasing more water than allowed by the "Agreed Curve." Additionally, the lack of public information on dam releases, dam operations and river flows makes it difficult for media and independent experts to soundly judge the performance of existing and proposed hydroelectric projects on Victoria Nile.

Some studies have inferred

that rainfall is the only meteorological variable contributing to the observed lake-level changes. This is quite likely, nevertheless, changes in air and water temperature, wind speed, humidity and cloudiness can also affect the lake's water balance via evaporation. In order for evaporation to produce the observed lake level changes, a temperature change greater than 4 degrees Celsius over the last forty years would be necessary. However, this is highly unlikely in the tropics. Thus, analytical research studies should focus on the physical mechanisms that govern the magnitude and variability of precipitation in the lake catchment area.

An article in the South African Business Week depicted that, "failure by authorities to adhere to agreed rules of procedure at the Jinja power dams has been cited as a major cause of Uganda's turbulent electricity and water supply sectors. A report from the Directorate of Water Development (DWD) revealed that non-compliance with the water release policy had led to the releases of water quantities beyond the permitted amounts at the Owen Falls dam...is partly responsible for the adverse drop in the lake Victoria levels."

Many hydrological experts agree that the lake is shrinking at an alarming rate. A Tanzanian hydrologist, Dr Raymond Mngodo, who has studied lake Victoria's hydrology for 20 years, reiterates that increased outflows for power generation – coupled with changing meteorological conditions – could partly be responsible for the decreasing water levels. As a result this has created an un-sustainable and fragile water balance (Figures 3 and 4)

Uganda is currently over-depending on hydropower,

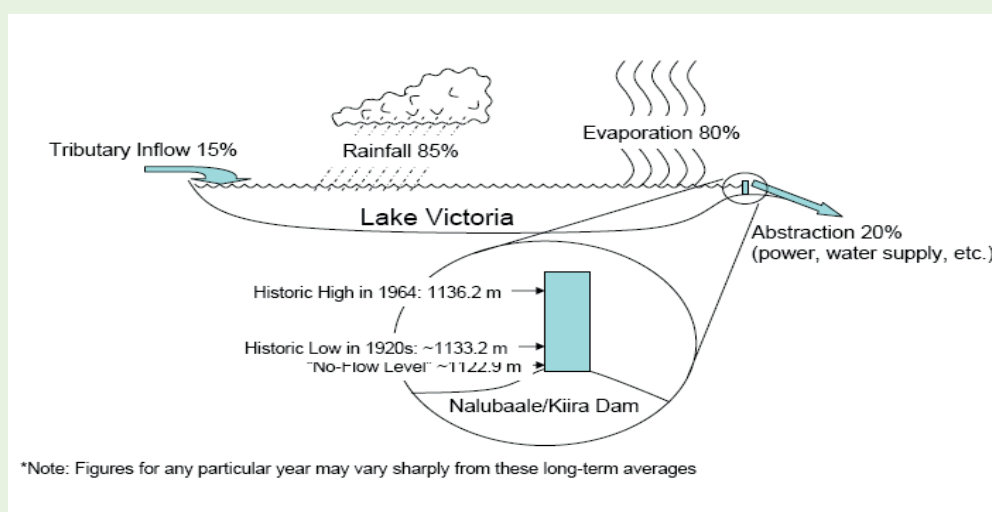


Fig. 3: The fragile water balance of Lake Victoria

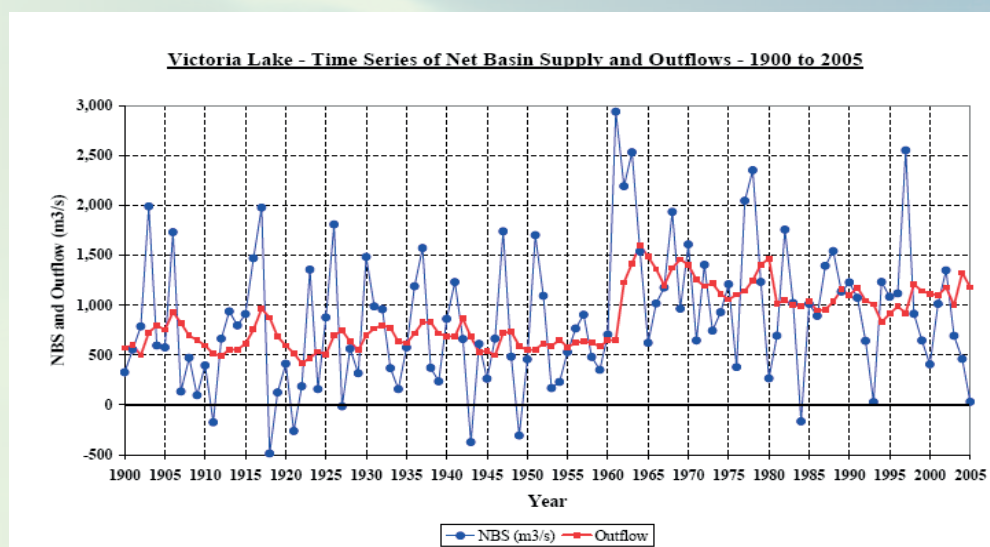


Fig. 4: Time series of net basin supply (NBS) and outflows [1900–2005]

at a time when the lake climate change appears to already be impacting Nile River hydrology. In light of the above facts, Uganda's friends, - especially development partners - should help the Government of Uganda to develop concrete strategic plans for energy projects that will reduce her total dependence on hydropower, because of the incoherent and stochastic lake hydrology. Without that, the future of the economy is hanging on a balance.

Another danger is lake pollution. It is mainly attributed to discharge of raw sewage into the lake, poor waste management practices in the lake catchment, i.e. dumping of domestic and industrial waste, fertilizers and chemicals from farms. The lake basin is one of the most densely populated rural areas in the world. Its shores are dotted with cities and towns - including Kisumu, Kisii, and Homa Bay in Kenya; Kampala, Jinja, and Entebbe in Uganda; and Bukoba, Mwanza and Msoma in Tanzania. These cities and towns are also housing many factories, most of which discharge their waste directly into the lake and its tributaries. This unfortunate practice has increased eutrophication, which has in turn aided in sustaining algal blooms and the invasive water hyacinth (*Eichhornia crassipes*).

Pollution in some parts of the lake - e.g. the Inner Murchison Bay (IMB) - has reached alarming proportions that have started to threaten the sustainability and reliability of the lake as a water source for water supply. With environmental regulation enforcement hardly in sight, major utilities in the East African region like National Water and

Sewerage Corporation (NWSC) have resorted to initiating projects to circumvent this pollution.

For instance, due to algal blooms in the IMB and Jinja intake area, the NWSC decided to extend both the Gaba (Kampala Water) and Jinja delivery pipe work, several hundreds of meters into less turbid-prone waters. This venture cost large sums of money, but how much time has NWSC bought before the bloom arrives

at the new delivery pipe site? The lake pollution - especially in the IMB area - is indeed a ticking time bomb, if not properly managed and mitigated.

On the other hand, the chemical costs of treating water - in water utility businesses like NWSC - have sky rocketed due to the blooms. Since 2007, NWSC has instituted studies to investigate the use of polymers as a substitute for alum in view of the fact that the use of alum is increasingly failing to handle the levels of algal blooms in the IMB abstraction area. The other risk emanating from pollution is the presence of blue-green algae, sighted in some parts of the lake, and is highly dangerous to human health.

Conclusion

The proper management of Lake Victoria - by all riparian countries - is absolutely critical, if we are to salvage its environmental and hydrological decadence. It's always easy to mismanage a valuable water resource like Lake Victoria. However, limnological experts reiterate that counter measures to revive might require tailor-made hysteretic environmental management systems, which could take entire generations to implement - bearing in mind that Lake Victoria has a water retention time of over 120 years. Thus, the time to begin salvaging what has remained from the environmental and hydrological decadence is now, and probably everyone has a part to play.

PICTORIALS

Pictorial I

The “Keep Gaba Environment Clean (KGEC) “Drive by Gaba Rotary Club

Mr Joseph Ndegeya (Business Relations Manager - NWSC) represents the Corporation in the keep “Gaba clean” drive spearheaded by the Rotary Club of Gaba.

Participants of the KGEC drive at serious work



Pictorial II

External Services (ES) Assignments

*Coastal Water Services Board
(CWSB) benchmarking visit to NWSC
(January 2011)*





Pictorial 3

The International Water Association-East African Young Water Professionals (IWA-EAYWPs) Conference [1st - 2nd April 2011]

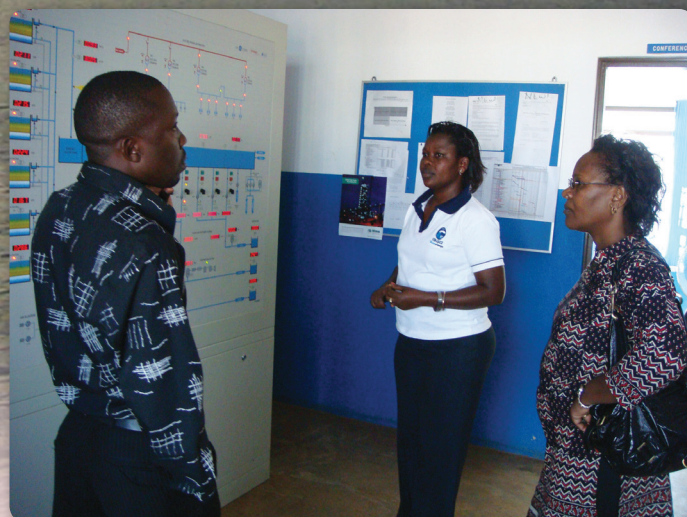




Pictorial 4

ES Assignments

The Kisumu Water and Sewerage Company (KIWASCO) delegation make a benchmarking tour of NWSC [March 2011]





PICTORIALS



Pictorial 5

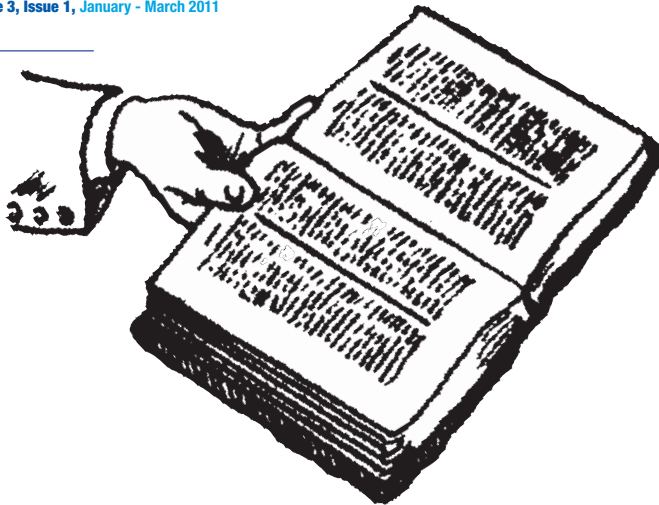
NWSC launches the e-water bill payment system [January 2011]





Pictorial 6

NWSC staff play a friendly match with the Red Pepper staff on Saturday, 19th March 2011. The former won the match



Some Biblical Wise Sayings

by Peluce E. Kabasomi & Martin Kalibbala

I was thinking about these glorious insights from GOD's word and decided to share them with you. Be blessed as you meditate on them.

1. Whatever you confess will heal you, whatever you don't confess will kill you (Hebrews 4:16; 1 John 1:9). The word of GOD tells us to come boldly to the throne of grace with confidence and confess our needs, challenges, and sins to GOD, so that we may obtain mercy and grace in dire time of need. It also tells us in John that If we confess our sins, he is faithful and just and will forgive us our sins and purify us from all unrighteousness. Psychiatrists say that the key to overcoming any issues in one's life is talking about them. *Proverbs 28:13*, also declares "...he who conceals his sins does not prosper, but whoever confesses and renounces them (before GOD) finds mercy..."

2. Faith gives you access to what you want GOD to do for you, it is the currency of heaven. Obedience is your entitlement to

Whatever you confess will heal you, whatever you don't confess will kill you.

Psychiatrists say that the key to overcoming any issues in one's life is talking about them.

that promise (Hebrews 11:1). GOD is touched by the needs (infirmities, pain, despair, etc) of His people, but He quickly reacts to faith poured upon that need. Jesus Christ used to say to the people He healed, "...be it unto you according to your faith..."

3. Obedience with the wrong attitude is abominable before GOD and goes unrewarded. In *Isaiah 1:19*, GOD says, "...If you are willing and obedient, you will eat the best from the land..." Notice here that GOD did not say "if you are obedient", He said "If you are willing and obedient". Willingness has to do with having a positive attitude, which matters a lot to GOD before He allows you to eat the good of the land. In *Mathew 21:28-32*, our Lord Jesus gave a parable of two sons of a certain man, the elder son agreed to do the father's will but did not go (obedient with bad attitude) but the younger son refused but later repented and did what his father requested (obedient with good attitude). So *obedience + good attitude = Eating the good of the land*

4. GOD's will is GOD's bill (Mathew 6:33). But seek first *his kingdom and his righteousness*, and all these things will be given to you as well. A man or woman doing GOD's will have all heaven behind them. It is man's greatest honor to know GOD's will but

it is beyond honor to do GOD's will. *Ephesians 5:17b* says, "...but understand what the Lord's will is..." Jesus also said, "...not everyone that calls me Lord, Lord will enter the Kingdom of heaven, but only those that do the will of my father..." (*Mathew 7:21*). Do you know God's will for you? Find in his word.

5. Moses "surrendered to GOD" and was able to wipe out an entire Egyptian army in the red sea (*Exodus 14:9-30*); but Moses "(un)surrendered to GOD" he could only bury "one" Egyptian enemy in the desert sand (*Exodus 2:12*). Surrendering to GOD is the wisest decision man can ever make, because it adds voracious power to marvelously conquer your challenges ("enemies").

6. The enemy you conquer today determines what you are going to be tomorrow. Battle fields make GOD's mighty kings and generals (*1 Samuel 17:1-58*). Remember David killing the bear and the lion in solitude and then later killed Goliath of Gath in public! What enemy are you facing? Is it problems, despair, fear, sin? Fight to win and do not give up! 'They say ignorance is no defense' if one is not aware of the enemy then it is definitely hard to overcome that enemy. But the bible reveals the enemy to us in (*Ephesians 6: 12-For our struggle is not against flesh and blood, but against the rulers, against the authorities, against the powers of this dark world and against the spiritual forces of evil in the heavenly realms*).

*In addition, every fighter needs to be equipped, e.g. a soldier always moves a gun, but in this case according to the word of God we need an "armor of God". This is exactly what made David win Goliath his most giant enemy. (*Ephesians 6:10-11*)- says finally, be strong in the Lord and in his mighty power. ¹¹ Put on the full armor of God, so that you can take your stand against the devil's*

schemes

7. The enemy you despise you conquer, and you cannot have authority over what you haven't conquered (*1 Samuel 17:45-46*). David told Goliath, "...I come against you in the name of the Lord GOD Surely He will deliver you in my hand..." Know that the strength to face life's challenges and the devil is not in you but from Christ our Lord; Paul the apostle said, "I can do all things through Christ that strengthens me" (*Philippians 4:13*).

8. The enemy you spare to conquer or kill today (*1 Samuel 15:1-8*), will definitely kill or conquer you tomorrow (*2 Samuel 1:3-12*). In the book of 1 Samuel the Lord gave instruction to King Saul through His prophet Samuel to go, fight the Amalekites and kill all and spare nothing because they had grossly sinned against GOD. Saul spared some of them and even brought back from battle some spoil. Do you know who was involved in Saul's killing, when he was finally dying after disobeying GOD? It was an Amalekite slave boy!

Fight a good fight of faith, as Paul the apostle said. Leave none of your enemies and GOD's, i.e. challenges, despair, stress, sin in your life, compromise, etc (*Ephesians 14-17*) Stand firm then, with the belt of truth buckled around your waist, with the breastplate of righteousness in place, ¹⁵ and with your feet fitted with the readiness that comes from the gospel of peace. ¹⁶ In addition to all this, take up the shield of faith, with which you can extinguish all the flaming arrows of the evil one. ¹⁷ Take the helmet of salvation and the sword of the Spirit, which is the word of God.

Mighty greetings from Calvary's rugged cross.

WHAT
DO YOU
THINK?



To comment on this article, please email up to 500 words to the editor at watereditorial@nwsc.co.ug or martin.kalibbala@nwsc.co.ug. A selection of significant comments received will be published in the next issue of the magazine. The Water Herald relies entirely on contributions sent in by NWSC staff, customers, guest writers and other stakeholders. Articles should be 1000 – 2500 words long, with adequate illustrations and references. Please contact the editor for further information.



Pictorial 7

The ground breaking ceremony of the Lubigi wastewater treatment plant construction. Members of NWSC staff, Board members and several representatives of the funding development partners, graced the ceremony





Pictorial 8

MD-NWSC, Board Members, P&CD Staff and Top Management give a guided tour to the Parliamentary committee on national economy at the newly proposed site of the Katosi Water treatment plant of Kampala water.



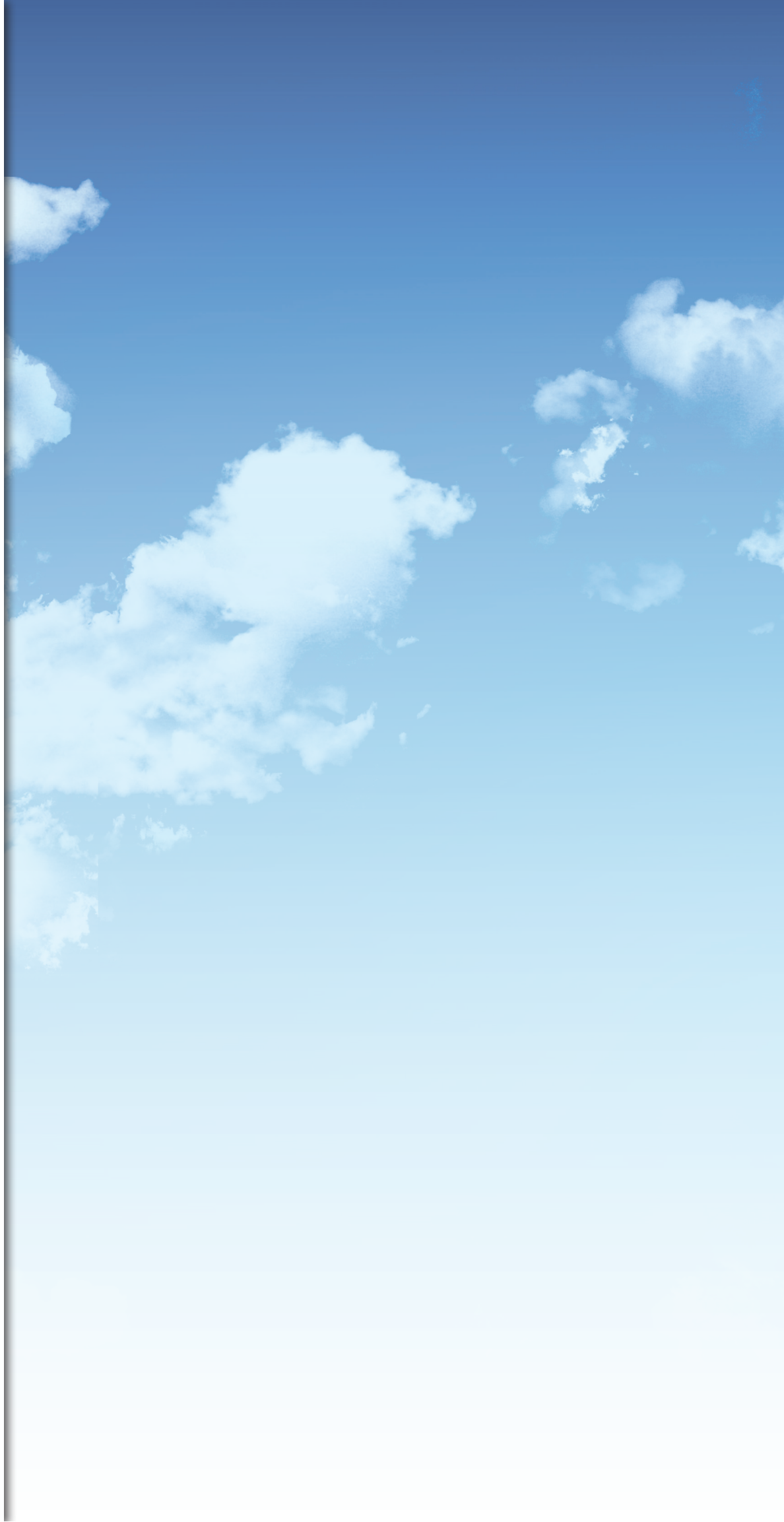
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