

THE MWALIMU NYERERE FOUNDATION



**INTERNATIONAL CONFERENCE ON WATER – THE LIFE
BLOOD OF MANKIND**

**ADDRESS BY
THE CHIEF GUEST**

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*The Arusha International Conference Centre,
Arusha, Tanzania
11th December 2002.*

The President of The Institution of Engineers Tanzania,
The Hon. Regional Commissioner,
The Secretary General of East African Community,
Hon., Members of the Institution,
Ladies and Gentlemen.

It is a great pleasure for me to be here on this important occasion and a great honour to have this opportunity to officiate the opening of "**The 25th Annual Conference**" of your Institution. I want to thank the President of the Institution of Engineers, Tanzania whose kind invitation made this possible.

Allow me at the outset to take this opportunity to welcome you to Tanzania especially to this beautiful town of Arusha, and to the **International Conference on Water-The Life Blood of Mankind**. I note with satisfaction that this conference is carried out in association with the International Association of Hydraulics (Africa Chapter) and that there are authors and participants not only within Africa, but also from Europe. For those coming from outside Tanzania, I want to extend a particular welcome to our country. **KARIBUNI SANA**. I hope

you will find some time to experience on first hand the beauty of the country and enjoy the hospitality of our people.

The Theme of the conference is indeed very relevant to our collective humanity. Water is not only the source of life; it is also crucial to development. If Africa is to make headway in moving the continent forward and improve the lives of its people, it has to manage its water resources in a sustainable manner.

The presence of so many eminent Engineers and Scientists here is a clear testimony of your recognition that "water" is a critical issue for the future of humankind and there can be neither sustainability nor life itself without provision of adequate water supply, not only for drinking but other human and utilization purposes.

Water is a precious natural resource, vital for life and socio-economic development of every country in the world. Water availability can be a matter of life and death, depending on how it occurs and how it is managed. If properly managed, it can be an instrument for economic survival and growth. As the recent tragic floods in Mozambique and the drought in the Horn of Africa and some parts of Southern Africa make

clear, too much or too little rainfall can have devastating consequences to our countries.

The UN Millennium declaration draws attention to the importance of water and water-related activities in supporting development and eradicating poverty. Targets have been set up for safe drinking water services, where the aim is to reduce by 50 percent the proportion of people without safe drinking water and suffering from hunger by 2015.

Water resources development is a crucial and integral component of sustainable development, and therefore its main goal is to alleviate poverty and improve the quality of life while protecting crucial ecological services performed by ecosystems. Hence, rational and efficient development and management of water resources can make a substantial contribution to poverty alleviation.

However, water resources in many countries remain fragile. Measures promoting sustainable use of water are far from satisfactory.

Globally, about 1.2 billion people still have no access to safe drinking water, and 2.4 billion do not have access to adequate sanitation

services. Some 2 million children die every year from water-related diseases. Thus, provision of safe drinking water and sanitation services to more than 1 billion people over the next decade remains one of the most critical challenges humanity is facing today. This is the challenge which has been recognized by the Millennium Declaration with respect to water and by the Johannesburg Summit on Sustainable Development with respect to sanitation.

The link between water and socio-economic development is self evident. Sustainable socio-economic development is not possible without adequate development of water resources to support food production, industry, the environment and other human needs. In Africa where a large part of its population lives in tropical and subtropical climate, it is absolutely fundamental that the role of water as an engine for development be properly understood by our people and leaders.

The frequency of drought has been increasing over the past 30 years, resulting in significant social, economic and environmental costs that are borne mostly by the poor. Not surprisingly, there are growing constraints to water supply in the dry lands that occupy about 60 percent of the total land area of Africa.

Within Africa, the supply of freshwater is highly dependent on rainfall patterns and varies considerably across our vast continent. Africa is a continent with great disparities in water availability between sub-regions and great disparities also exist within and between countries. While there are areas with plentiful supply of water, there are others where water is scarce. For example northern Africa and southern Africa receive 9 percent and 12 percent respectively of the region's rainfall. In contrast, the Congo River watershed in the central humid zone, with 10 percent of Africa's population, receives over 35 percent of its annual runoff. Africa's total runoff, which is reflected in its useable and renewable water resources and accounts for 10% of the world's freshwater resources, is thus very low.

While Africa's supply of freshwater resources is low in comparison to other continents, less than 5 percent is withdrawn each year for water supply, agricultural activities and industrial uses

In spite of the relatively low use of water when viewed from a regional perspective, it is evident that some of our countries are beginning to face serious shortfalls. This is due to rapid population growth, large-

scale rural-to-urban migration and environmental degradation. At present, it is estimated that fourteen African countries are experiencing water scarcity and the number is expected to rise to twenty-five by 2025 if this trend continues uncontrolled. In view of this trend, African countries will thus need to address this challenge urgently. This is essential if the shortage of water is not to become a major impediment to economic development and to the reduction of poverty.

Furthermore, it is predicted that by the year 2025 many African countries will experience water scarcity, partly due to population growth and urbanization which are currently estimated to at 2.7% and 5% annually respectively.

It has also been realized that freshwater resources in Africa are under severe natural and social pressures, which directly affect the continent's economy.

In the rural areas in our continent, about 65 percent of the population does not have access to an adequate supply of water. In urban areas, 25 percent of the population does not have access to adequate water. In fact, since the Water and Sanitation Decade, progress in coverage

has stagnated, and more people are without adequate services today than in 1990. Inadequate financial resources, appropriate technologies and human resources are the major limitations.

Due to these limitations, almost half of all African countries are prone to common water-related diseases, with worst mortality statistics caused by cholera and infant diarrhea. Out of the 46 countries in the world in which bilharzias is endemic, 40 are in Africa. Moreover, 16 of the 19 countries reporting Guinea worm disease are in Africa. Few people who have access to water are likely to be confronted with the fact that population growth, at 3 percent per annum, is the world's highest. Hence, from 1997 to 2025, the population is expected to almost double, from 778.5 million to 1.453 billion. Africa is also experiencing the world's most rapid rate of urbanization at 5 percent per annum.

However, it would appear that the inadequate access to basic water supply services is not rooted in the inadequacy of available water resources. The root cause appears to be financial, institutional and technological. Hence, the trend of the poor performance of economic development in Africa unless reversed would continue to pose a challenge to financing sustainable expansion of access to safe and

adequate water services for all, especially the poor. This is a very serious challenge which African governments need to address effectively.

Inefficiency and wastage in water use is another water crisis in the African region. Given its current economic situation, Africa cannot afford to spend its constrained resources on producing water that eventually is wasted. For example, the average level of water that is unaccounted for is about 50 percent in urban areas, and as much as 70 percent of the water used for irrigation is lost and not used by plants in Africa.

These high levels of water wastage may be attributed to several factors. In the case of water supply, a contributory factor is the neglected maintenance of installed equipment. In fact, in many African counties, limited resources borrowed for water supply go towards rehabilitating installed facilities instead of expanding services. This is an indirect way of borrowing for maintenance because rehabilitation has become a form of delayed maintenance of facilities. Apart from being a drain on limited financial resources, this is a major constraint to the expansion of services to the unserved. Incentives and technological improvements

are needed to reduce such waste and improve the efficiency of investments in water resources.

It is also worth noting that despite the high levels of food insecurity in the continent, most countries have substantial underutilized potential for irrigation expansion. In fact, two thirds of African countries have developed less than 20% of their potential and just about 6% of the cultivated area is irrigated. The challenge is, therefore, how should Africa's water resources be developed so that it is not the limiting factor in the expansion and increased productivity of both rain-fed and irrigation – based agriculture to ensure food security and economic development.

Ninety-five percent of the total energy consumption in Africa is supplied by coal-based power plants while only 4% is covered by hydropower. The hydropower potential of the continent is estimated at about 1.4 million Giga Watts hour (GWh), of which less than 3% is utilized. Small-scale hydropower potential for supplying rural areas with energy is hardly exploited. Hence, it is recognized that ensuring food and energy security calls for a range of actions involving socio-economic development policies.

Extreme spatial and temporal variability of climate and rainfall on the continent is also one of the significant features and challenge of water resources in Africa, with far-reaching consequences for water – resources management. This variability, which is exacerbated by unpredictability, has great significance for the development of surface water resources and for the large areas of the continent that are underlain by low-storage aquifers, which are dependent on effective levels of annual rainfall.

Another challenge worth mentioning is the paucity of data on water resources. This problem is linked to inadequate human capacity for the collection, assessment and dissemination of data on water resources for developing, planning and implementing projects.

The skills for Integrated Water Resource Management (IWRM) are not widely available in Africa either. A massive program for capacity building is therefore needed to produce a cadre of water professionals (both men and women) who are highly skilled in IWRM principles and practices. The challenge is how to retain trained staff. It is generally recognized that even if the trained staff are retained, the skills they

acquire may become atrophied from lack of use unless appropriate incentives are introduced. A second challenge is therefore, how to devise such incentives so that they are consistent with the aspirations of the staff and with the goals of the water sector. These are pressing challenges that call for immediate retention and motivating strategies.

Inadequate water resources development is another crisis in the continent. Scarcity of water in Africa is not entirely due to natural phenomena. Arguably it is partly due to low levels of development and exploitation of water resources even though there is a growing demand for water in response to population growth and economic development. Only 3.8 percent of internal renewable resources are being withdrawn for the three major water uses of agriculture, community water supply and industries. Constrained financial resources may be the prime reason for this low level of water resources development.

Depletion of water resources through human action is another area of concern to majority of the countries in the region. Available resources are being depleted through human-made actions that reduce both their quality and quantity. Water pollution is increasingly pathetic across the continent, from industrial pollution, poor sanitation practices, discharges

of untreated sewage, solid wastes thrown into storm drains, and liquid leached from refuse dumps. Serious pollution problem is caused by food-processing waste and the decaying of invasive aquatic weeds. Poor land use and agricultural practices compound these problems. As a consequence, concentrations of waste frequently exceed the ability of rivers to assimilate them, and water -borne and water - based diseases have become widespread.

The consequent deterioration of water quality is a significant form of depletion of available water resources. At best, it increases the cost of developing water resources and at worst it increases water scarcity.

Let me now turn to the question of the multiplicity of trans-boundary water basins. As we enter the new millennium, one of the key challenges in Africa is the multiplicity of international water basins in a situation of weak international water laws and weak regional cooperation on water quality and quantity issues. Africa has about one-third of the world's major international water basins. There are about 80 international river and lake basins in Africa. The Nile basin for instance, serves 10 riparian countries: the Congo serves 9, the Niger 9, the Zambezi 8, the Volta 6, and Lake Chad 5. Moreover, there are

countries in which several international rivers pass through. For example, Guinea, has 12 such rivers. However, very few shared waters are jointly managed and in many respects, the issues of water rights and ownership of international waters remain unresolved, and national interests tend to prevail over shared interests.

Many of Africa's water basins are international, their uses as a unit for water resources management require partnership and cooperation between countries sharing them. In the absence of such cooperation, the potential for conflicts among riparian countries is bound to increase and is likely to intensify in future as water scarcity increases. While national and customary laws exist to deal with conflicts at the local and national levels, existing international laws cannot adequately address conflicts between countries and among riparian states.

While the African continent is facing enormous water challenges and crisis, opportunities exist to enable the region to achieve equitable and sustainable water uses for socio-economic development. In order to make use of these opportunities a shift in a way of thinking about water-resource management is indispensable. Our water resources need to be managed in such a way as to secure an adequate and

reliable supply of water to support our socio-economic development. At the same time, they should be managed to protect the gains of development from the potential damaging impacts of too much or too little water resulting from floods and droughts.

This calls for a form of water-resources management known as Integrated Water Resources Management, which is reflected and advocated in the Africa Water Vision. The African Water Vision stresses three main types of water security that African governments need to focus on in order to enhance equitable and sustainable water use for socio-economic development:

- Security of water as an instrument for social investment
- Security of water as a factor of production, and
- Security of water for mitigating economic and human losses.

Social investment is a driving force for development. If we don't invest in our people, how can we expect them to be ingenious! Most of the major public-health problems facing Africa are water and excreta-related. Such diseases include; bilharzia, malaria, cholera and many others with causes linked with poor water and inadequate sanitation.

They are responsible for high levels of debility and mortality in Africa. They lead to a reduction in productivity, loss of incomes and premature death.

In seeking to formulate and implement an effective water-development and use program, African countries will need to consider a set of related policy issues.

Fortunately, many African countries are committed to face the challenges that confront them. Such commitments are demonstrated in the field of water policy, strategy and institutional arrangements, where a number of advances have been made. These include; an increased awareness and political commitment to embracing integrated water resources management (IWRM). Increasing commitments have been equally documented in the areas of water policy reform and a strong trend towards decentralization of water institutions. Furthermore, there is a thrust towards financial sustainability in the water sector and a realization of the importance of treating water as an economic good, while providing a safety net for the poor.

There is, in the first instance, a need for the implementation of national and regional integrated water resources management policies. The application of such policies requires that economic, social and environmental needs are taken into account within the appropriate institutional and technical framework. Such an integrated approach would entail adopting a holistic management structure at the water-basin level, as well as ensuring stakeholder participation in the decision making process.

Significant proportion of Africa's water resources is shared among a number of nations, thus, integrated water-resources management calls for a basin-wide approach for planning and implementation. Close cooperation among concerned states of the utilization of resources, harmonization of institutions, and joint implementation of development programs is thus essential. Joint development of shared water resources should therefore be an integral part of regional cooperation and integration efforts.

The development of effective policies would require adequate knowledge of the availability of water resources, and of the demand for and use of water economic and environmental needs. There is, at

present, inadequate basic data in many of our countries. It is thus essential that the knowledge base be expanded through the use of technology and other appropriate measures. I wish to note that this is one area where technical assistance from our development partners could indeed be very useful.

Our national and regional institutions will also need to be reformed and strengthened if new policies are to be implemented effectively. Past efforts in many countries in the region, have resulted in the proliferation and fragmentation of agencies responsible for the various aspects of water-resource management. Experience has shown the importance and the need to adopt an integrated and long-term approach. In this regard, in addition to strengthening and consolidating institutions, it is essential to reform human-resource policies and civil-service systems to ensure the development and retention of the required expert skills.

Experience has shown that many African governments rightly place a high priority on access to safe and adequate water supply and sanitation, but to ensure a sustainable expansion of the same, African governments need to allocate adequate financial resources for its implementation. In some of our African countries we are experimenting

with commercialization and even privatizing water-resources and sanitation management. This provides a way of charging those who can afford water like industry to help pay for those who cannot, like the thousands of villages in Africa that still don't even have a water tap.

In Africa, the major users of water include agriculture (85%) and industry (6%). Most countries in Africa overwhelmingly depend upon rain-fed agriculture. This applies not only to food crops, but also to commercial crops like cocoa, coffee, tea, sugar and cotton. At present most countries have substantially underutilized their potential for irrigation. Two-thirds of African countries have less than 20 percent of their irrigation potential developed. So there is enormous potential for expansion. Moreover, security of water for industrial purposes will also stimulate investors in industrial sector as water play a major factor in industrial processes.

We need to manage our water resources to secure the gains of socio-economic development from the ravages and uncertainties of the weather. Experience of disasters in Mozambique and Madagascar is a clear lesson to us and African governments should strive to avoid recurrence of the same. The management instruments should not be

limited to water resources. They should be widened to include management of other resources and phenomena that have significant positive or negative impacts on drought and floods, such as land and deforestation.

This brings me to another critical issue: regional co-operation. Rivers and lakes know no boundaries. Rains and droughts do not carry passports. If any one resource demonstrates the absurdity of the division between African countries, it is water.

In the field of international co-operation the SADC Protocol on Shared Watercourse Systems represents a model for what can be achieved if countries cooperate over their shared water resources. Other models include the Nile Basin Initiative and a number of river basin authorities such as those of the Niger and Lake Chad. Joint water projects between countries are encouraging examples of positive regional cooperation. These include the Lesotho Highlands Water Project (between Lesotho and South Africa) and the Komati Basin Project (South Africa, Mozambique and Swaziland). The challenge is for immediate action to create an enabling environment for joint

management of international water basins to become the norm rather than the exception.

It is no accident that the best-managed water resources are within functioning regional groups. The Zambezi River protocol of the Southern African Development Community is one such example. Conversely, where a river cuts through several countries and regional groups, and there is no coherent plan for its management, threats and dangers loom.

Effective Water resources management policy will provide for the right institutions, regulations and economic tools, promote sound investment, and inspire a new generation of professional and technical staff with knowledge, skills and commitment. The stewardship of Africa's water resources will engage all of society, as everyone has a responsibility to use water wisely, conserving and protecting the resource for future generations. 'Self-help' is a traditional strength of Africa and should be harnessed to make managing water everybody's business.

I would like to stress that, development and use of water resources would require the mobilization of considerable funds to finance the

required investments. Given the serious budgetary constraints that many governments face, it is essential that new public/private partnerships be created to allow for mobilization of resources from the private sector and for joint rehabilitation and development of the required infrastructure. Important initiatives have been taken in some countries to promote such partnerships and these could serve as useful examples for others. I would like to point out in this regard that such partnerships would also require the adoption of a new policy framework, including full cost recovery for water services with due regard for social equity.

Investments in water storage will be a priority in the coming years, to reduce the impacts of variability. The development of large dams has significant social and environmental impacts, and the challenge is to minimize such impacts through appropriate storage solutions, including watershed and wetland conservation, as well as artificial surface water and groundwater storage. At the same time, non-structural alternatives, such as regulatory and pricing schemes, can help by modifying patterns of water use.

In all our efforts to develop effective water management, it is essential that environmental considerations be taken fully into account and become an integral part of the system. I wish to stress in this regard that environmental degradation is indeed one of the principal causes of the problems facing water management in a number of countries. Various measures to reverse this trend should be considered. These include allocating sufficient water for meeting environmental needs, instituting proper environmental management, and preventing environmentally harmful practices.

I have had an opportunity to peruse through the proceedings and I was impressed by both the breadth and depth of subjects covered.

I am encouraged that the papers cover some of the various issues that I have already made reference to. I note that the papers cover not only water supply and distribution, but also sanitation, energy, pollution abatement, river engineering, erosion and water resources management.

I am looking forward to the recommendations of this conference, so that I can assist in disseminating them to all the key actors within the water sector in Africa.

I realize that the Challenge ahead for all of us is daunting but with a determined will and cooperation, we can surmount this difficulty and can make the dream of the Millenium Goals a reality and through proper water management, supply the least privileged with a basic human need: safe water and sanitation and also increase our food security by producing "more crop per drop". The role of Engineers and specifically your institution in bringing about the attainment of these goals is self evident and I wish your conference fruitful deliberations.

**I NOW DECLARE THIS CONFERENCE OFFICIALLY OPEN AND
THANK YOU FOR YOUR ATTENTION.**