PUTTING SCIENCE, TECHNOLOGY AND INNOVATION AT THE HEART OF DECISION MAKING PROCESSES IN TANZANIA: THE NEED FOR INSTITUTIONAL TRANSFORMATIONS AND CHANGES IN THE WAYS OF THE TANZANIAN SCIENTISTS, RESEARCHERS AND THE SOCIETY AS A WHOLE

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Honourable Madam President of the SUA Convocation,
Deputy President,
Honourable Treasurer,
SUA Deputy Vice Chancellors,
Members of the SUA Convocation,
Ladies and Gentlemen,

I am honoured to be here today and I am grateful for the opportunity to share my personal experiences, fears and concerns on how we run our affairs as Tanzanians. To me this is an opportunity to share an intimate moment with people that I hold in high regard, i.e. Scientists, Researchers.

My special appreciations go to the SUA Convocation leadership for granting me this honour and to the entire SUA community for approving it and for being here today. I wish to apologize in advance in case of any feelings of provocation or bitterness that might be generated as a result of my honest speech. I also apologize if I sound too philosophical or poetic. It's all because my heart fears for this country and it bleeds to see the level of self-inflicted pains of poverty and misery that our society and especially the rural poor endure every day. Although I cannot promise to be diplomatic, I promise sincerity and my personal reflective truth.

Let me start by saying that, in front of any problem, there can only stand two types of a man. Either a coward or a brave one. The brave one will face the problem head on and transcend it without fear or compromise. He will always come out victorious and with an extra muscle grown from the experience of solving the problem. On the other hand, the coward one will reduce himself to the levels of the problem and adapt it. In doing so, the coward man is always weakened by each problem faced and reduced to levels lower than what he was before. It pains me to say that we Tanzanians have often chosen the coward ways to solve our national problems, and we have been progressively weakening. We adapt to problems rather than transcending them. And as a result we are underachieving. Therefore my speech today will focus on how wrong we have gone and hardly on how good we have been. It is not that there is nothing to celebrate, but to me what we have achieved is way below what we are capable of. So forgive me for solely focusing on the uncovered mileage and therefore sound probably too negative.

Ladies and Gentlemen, First let me congratulate the University for working tirelessly to groom professionals and to develop scientific ideas both of which are very important for our economy. The times are hard especially with dwindling resources, changing political landscapes and increasing numbers of students which put a lot of pressure on the teaching facilities and staff time. This makes

teaching very demanding especially where levels of commitment to learning amongst students are not up to expectations due to different reasons. It goes without questions that we have put our youths on crossroads; where they see no future without education, but they don't trust the education systems anymore. It is like they come to university to get a key to life, but in the end they use muscles to break doors. All in all, our universities are working very hard especially in training, but in my opinion, there is more to be desired on how they currently position science in our national decision making processes, for a better Tanzania.

Ladies and Gentlemen, I just talked about "a better Tanzania." This means I disapprove the current one, not because there are no good things, but because we deserve better and I know we can afford better. My premise here is the belief that all the misery we currently face is self-inflicted, as a nation. My focus today is therefore on people because it is the people who make or break the destinies of their communities. Look at Singapore and UK, their lands are not as rich as that of Tanzania, but their people are rich and we are poor. This was possible because they first made their people rich in the inside, and then worked hard together to shape the outside. Schwerin and Werker wrote in 2004 that "…the key to success is societies putting a premium on learning and improving problem-solving skills." This means, the richness of a country in terms of natural resource like minerals, huge permanent water bodies, wild animals, etc., is of no value to the people if majority are poor in the inside i.e. are ignorant, unskilful, with wrong attitudes, selfish desires, fears and are unable to innovate. In such cases the resources might even be vandalised or become a big source of conflict. Therefore, for a country to develop as a nation, a significant level of consciousness among a critical mass is needed.

Ladies and Gentlemen, Let me talk about people and consciousness. A conscious community is the one that sees things from a wider perspective and deal with their affairs with a deeper meaning for the benefit of generations and the entire mankind. I look at what we do to ourselves as a nation, and I can't resist to wonder if we are all conscious at all. Just look at how we are cheaply mesmerized by petty political arguments and excuses that lead us to subscribing to outrageous economic deals. I look at how we misuse resources, misleading our youths, selecting bad leaders, making uninformed decisions, signing deceitful contracts, attracting wrong allies, joining wrong partnerships, hypnotising ourselves with lies and comforting words, striping off our natural resources, singing political songs that are not ours, making wrong investments, celebrating lawlessness, galvanizing hypocrisy, protecting selfish comfort zones, exalting corruption, justifying social and economic inequities, defending political monsters, using the poor to the advantage of the few, standing unimaginable malpractices done by our leaders, and worse, nourishing the spirit of cowardice that blocks us from getting prepared to embrace changes intelligently. And as a result of incompetence in containing global pressures within our leadership, a leadership that we have put in power ourselves, we find ourselves climbing bend wagons so often. Not once, that Tanzania has repulsively made ignorant and rushed decisions which delineate context after banking on deficient conclusions. And to my disbelief, we do all this very consistently, humbly, swiftly and peacefully without blinking. This makes me wonder if we really value life.

Ladies and Gentlemen, Just like the way doctors and patients are both dignified when patients respond positively to treatment, development practitioners and communities are also dignified when communities respond positively to development initiatives. So unless we invest on the people we will never realise significant results at national level. My question is, "are we investing sufficiently on both sides of the development equation?"

When I listen to the radio, watch TV, Read newspapers, read forwarded emails, navigating my way through heavy traffic during the rush hours in Dar es Salaam, or when I talk to people on our usual *"hali ngumu"* discussions, I sometimes feel like we have suddenly gone into a zombie state; that we are all sleepwalking and not in control of what goes around us anymore; because everyone is complaining citing long litany of lamentations but no one seems to know how to go about it. Life has become robotic with people reacting only to daily impulses with no sense of hope or vision of a grander tomorrow. The repeated negative circumstances have made us wild and very resentful of something that we cannot point a finger on. So we either get used to it or seek solace to alcoholism, drugs, sex, gambling, and to other different forms of addictions just to make our days feel shorter and passive. Some submit to witchcraft or turn into religious fanatics, workaholics and even convulsive politicians and professionals, while some end up mad and wonder the streets. I am not exaggerating, it is happening.

The sum of these is a group of people who are no longer useful to the society or to themselves. Sadly, we have allowed immorality and bad behaviours to go beyond random individuals into affecting groups of individuals. For example, it is now common to hear phrases like *"madaktari wa bongo bwana……", waalimu wa siku hizi….", "wanasheria wetu bwana….." "vijana wa siku hizi..!" "madereva wa daladala bwana…" "viongozi….." wahandisi…", etc.* meaning that immorality is now affecting groups of people. Unfortunately once bad behaviour is entrenched in a group it becomes very difficult to deal with because taking any legal measures against the group poses the risk of sparking riots which can lead to public unrest. This means by not addressing the root problems fuelling bad behaviours in our community, we are actually setting a timed bomb.

Ladies and Gentlemen, What I am trying to express here is the fact that we are now operating in an environment where Tanzanians are collectively sad, resentful, worried, dissatisfied, angry and confused. They have lost trust and they feel neglected and helpless. They express a great sense of remorse that nothing is working for them anymore. As a result, the large proportion of the community is dysfunctional, demotivated, despondent, passive and unhealthy both physically and morally. Our society is now like one big "emotional gang"… And the only thing that keeps us still in one piece is the belief in God which we largely use to justify being passive on problems, as we leave everything to God.

If you visit any public workplace today, be it in a bank, District office, hospital, TRA, TANESCO, DAWASCO, Land registry, Post office, you name it, you will witness an aura of incompetence, lack of commitment to work, an attitude of late-it-be, and a bizarre atmosphere of insensibility where everybody is busy but without aiming to achieve anything in specific. The relationships between workers and their jobs has become exactly that of an account holder and an ATM machine! Days come and days go and all what is important is to survive. Our people are closing in to their breaking points and they are now capable of doing anything to survive! They can steal, kill, lie, cheat, kill albinos, mix kerosene with diesel, sell expired or fake drugs, bottle unsafe tap water and sell it as pure mineral water, sell human parts, feed pigs with contraceptives, push drugs, pay ghost salaries, forge certificates, abuse procurement procedures, adulterate milk before selling, desert families, disguise to beg in the streets, become fake traditional healers, become fake pastors and perform fake miracles, "*chakachua everything",* or do anything possible, just to survive!

At the higher level, we are witnessing high levels of incompetence, irresponsibility, corruption, misappropriation of resources, greedy, amassment of unimaginable wealth among government officials, lies, and an endless string of cases of abuse of power and unpatriotic moves. We see our leaders

misusing public resources which belong to very poor people in the villages, or those from rich people coming from outside the country, and anything in between. As a matter of fact, we are in a situation where leaders have immortalized themselves and no longer feel accountable to the people. They have become a priority only to themselves. It is now "we" against "them". Just like in the jungle.

Ladies and Gentlemen, At the beginning of my speech I said "my heart is bleeding", and I meant it.
As a matter of urgency, we need radical transformations at all levels both from within and without if we are to make Tanzania better. The internal pressure has built to the brim and is reflected by the widespread ill-conduct and the poor psychosocial wellbeing of the society. This is a manifestation of prolonged exposure to stress, manipulation, and stagnation including grinding in poverty while witnessing a small group of people leading excessive lives of consumption and adulation.

Ladies and Gentlemen, Before I talk about what I think should be done, allow me to also describe the external pressures that Tanzania is facing, where the only choice we have is to transform, else we perish!

UNFPA says that we are now 7 billion people in the world. We passed this mark last October 31st. This means more pressure on global resources like land, water and energy. It is estimated that up to now we are already using 38% of the global arable land and the increasing demand for food, coupled with the growing concerns on the environment, we will need up to 80% of the land to make the world food secure. The situation will be even worse if a significant reduction of carbon emissions including sucking of the historical emissions is not achieved to reduce the impacts of climate change. Inventions from science and technology are very import here in order to make food production more efficient without putting much pressure on the environment. It is very inspiring to read the progress made by the global scientific community in addressing this challenge. However, there are growing concerns on the use of GMOs and it is important that wise decisions are made as debates continue between utilitarians and dignitarians.

The growth in population is also expected to increase migration as people will be forced to move to where there is water and jobs. It is speculated that, at one point the movement of people will be too high that no political or geographical borders will be able to contain it. This means borders will collapse and the fittest will survive. On the other hand, this situation might trigger unemployment or land crisis in some parts of the world. For example, Tanzania like most African countries has many people in the farming business who are not generating profit. Therefore, with population pressure value of land will continue to increase and poor people will be tempted to sell parts of their land and be left with very small plots for themselves. In the end the average farm sizes held by the majority will shrink to unprofitable sizes, and unless these small farmers are absorbed in other sectors, unemployment and inequity in income distribution will increase.

On the other hand, the increased population can also be an opportunity as it increases demand for goods and services. African countries can therefore work to utilize this opportunity by making the right investments, establishing the necessary institutional arrangements, making sound political alignments, and building the necessary capacities needed to benefit from the global advancements in science and technology and produce significant volumes of competitive products to win global markets. However, a number of painful transformations are necessary to make Tanzanian achieve this.

Another external pressure comes from globalization. The markets have become more globalized and very competitive. Participation in such markets demands high levels of consistent product quality, product differentiation, and supply. Therefore, if we are to survive in the global business, our products must be able to compete with those from the rest of the world. This means sustaining high levels of specialization in products that are of high market value and which are cost-effective. We also need to upgrade our technology levels and define a proper mix of small, medium and large scale actors in a particular value chain because linking small to small has proved not to generate the level of growth that we need as a country.

It is very important we note that unlike developed countries who encounter development through a way of discovering and gradual evolution, developing countries have to make a conscious move to develop. This includes making deliberate choices and investment to innovate within tight deadlines and specified broad development goals like the MDGs. Developing countries are actually pushed to 'catch-up" and close "the digital divide". This global pressure to develop is in-fact a big challenge as we run the risk of being an experimental ground receiving too many and sometimes conflicting suggestions and uncensored support, sometimes with lots of "arm-twisting". Hence we need to strongly know what we want and what we can do, and do it properly. In principal we need very sane leaders on the throne!

For example in September 2000 African countries and the international community adopted the Millennium Development Goals (MDGs) at the United Nations Millennium Summit. They committed themselves to seeking and adopting practical solutions to major challenges facing majority of the world's population, particularly those in Africa. The attainment of the MDGs by African countries will require reorientation of development policies and programs to focus on long-term sources of economic change and growth. By large, this will need to explicitly take into account the role of science and technology in socio-economic transformation demanding countries to design and implement policies as well as create institutional arrangements that promote the development and application of science and technology to solve specific problems around each of the goals. The role that science and technology play in the attainment of the MDGs is implicit in the Millennium Declaration adopted by the Heads of States. This is indeed a very big promise, and by now Tanzania should have something to show since it is already 11 years after that state signature in 2000.

Ladies and Gentlemen, We need change, and we need it now to transform our society and our economy. To achieve that we need to take a bold step and do the following: (i) we all have to leave our comfort zones, each one of us; (ii) We have to change our attitudes and be more proactive and risk takers; (iii) We need to gain control of our political landscapes and engage sufficiently in the national debates; (iv) we have to devise new approaches that allow transformative actions towards growth; and (v) we have to push the current national boundaries of science and technology away from the current situation where we focus too much on small scale appropriate technologies, that there is less focusing on high level technologies. It is indeed a pity that as a country we currently think too small like we are all confined at operating from a *"petri-dish"* perspective. Just look at what we always display in the "*Nane Nane agricultural shows". Y*ears in, years out we witness almost the same people, same things, and the same scales being majestically displayed with little or no signs of significant growth. Our fellows in other parts of the world have realised that too much small is not beautiful anymore!

Basically, we need a scientific and countrywide attitudinal revolution by restoring trust to science and technology. We have to push science into the heart of political domains and ensure that political

decisions are guided by scientific evidence and conclusions. Gone are the days that politics alone can run the government machinery. Such transformations require a lot of changes in different sects of our economy including within our R&D institutions where researchers need to change their attitudes and accept new roles beyond research. Researchers will have to demonstrate high levels of engagement on matters of importance to the society in order to regain citizens' trust and confidence. In fact, researchers have to work extra hard to make our political leaders recognize the role of science and technology in achieving our development goals. Actually, researchers have to step forward and help the entire Tanzanian society to believe in science and adjust accordingly to brighten the future. Let us look at how Rwanda has made such a move.

In 2003, Rwanda emerged from its first democratic elections with a new, government entrusted with meeting the challenges of building an economy based on science, technology, and innovation (STI) and making Rwanda a technology hub in Sub-Saharan Africa. Together with other science and technology-oriented ministries, the Ministry of Education, Science, Technology and Scientific Research were charged with implementing this vision—**even if it meant breaking down bureaucratic barriers, doing the unusual, and formulating and implementing ambitious STI policies.** Rwanda's commitment to STI capacity building starts at the very top. The president of Rwanda, His Excellency Paul Kagame, was the first to stress the importance of making science and technology an instrument for Rwanda's economic and social development. During his January 2004 address to the diplomatic corps, he outlined the following ambitious goal: **"We will continue to invest in our people and strive to open up the frontiers of science, technology, and research as we broaden our trade links with our neighbouring countries and beyond."** President Kagame has not wavered from this initial vision. In his speech to the U.K. Royal Society in September 2006, he stated: **"We in Africa must either begin to build our scientific and training capabilities or remain an impoverished appendage to the global economy."** In his January 2007 address to the Eighth African Union Summit**, he emphasized that building science and technology capacity is synonymous with economic transformation.** STI capacity building, he explained, "is about applying science and technology holistically—in all levels of education and training, in commercializing ideas, in developing business and quickening the pace of wealth-creation and employment-generation, in enabling government to provide better services, and indeed in providing basic tools to society at large for self- and collective betterment." ***[Source:** Building Science, Technology, and Innovation Capacity in Rwanda: DEVELOPING PRACTICAL SOLUTIONS TO PRACTICAL PROBLEMS (2008): Edited By, Alfred Watkins and Anubha Verma; The International Bank for Reconstruction and Development/The World Bank.]*

For the Rwandese, apart from all broad principles for building national science, technology and innovation capacity, innovation must be promoted **as a way of life for everyone**, not a sporadic activity of a few isolated scientists. This is true for any country that wants to transform her economy.

Ladies and Gentlemen, Then where do we start?
Using the on-going Tanzania's Science Technology and Innovation (STI) Reform Programme as a platform, Scientists and Researchers can take a leading influence in developing the National Innovation System and later on in implementing the intended reforms towards changing our economy from being resource-based, into a knowledge-based economy. The Programme is implemented by the Government of Tanzania through the Ministry of Science and Technology and is co-funded by UNESCO. The process of designing and implementing the reforms is a very challenging task and support from all relevant actors in the country is needed. I am personally involved in the program steering committee and I will be delighted to see scientists coming in bold and hard. Enthusiasm, commitment, creativity and

perseverance are needed if we are to achieve this ambition because, just like President Kagame said, a lot of deconstruction might be needed before we can reconstruct.

The first thing is therefore for research institutions like SUA to take a honest stock of what needs to change within their institutions in order to claim a significant space in the national decision making process. Then work out strategies to effect these changes without fear or repulsion. It is important to note that, Scientists working in agriculture have more reasons to be on the frontline pushing science in the development planning machinery because of agriculture's importance to our economy and livelihoods in general. Fortunately claiming a space in the national development planning processes is in line with the Abuja Treaty of 1994 which established the African Economic Community (EAC), and the Sirte Declaration on the creation of the African Union (AU). As AU, African Heads of States have agreed to promote Human Resource Development, Capacity Building, and Science and Technology as tools and Youths as partners for socio-economic development with governments, private sector and researchers as the main drivers. The aim is to strengthen the scientific base of the continent and through the New Partnership for Africa's Development (NEPAD) which was adopted by AU in July 2001, to recognize that science and technology will play a major role in the economic transformation and sustainable development of the continent. What is needed here is for Tanzanian scientific community to take a bold step and spearhead these processes within NEPAD and translate them into practical initiatives in the country. Working from a continental point of view has a lot of advantages in terms of leveraging any political incorrectness, accessing resources and for cross-learning.

Scientists and researchers should therefore demonstrate to the government their keenness in taking the driver's seat in leading the nation through this process. From this point, national research institutions, especially universities can create a strong hub that brings efficiency, diligence, commitment and seriousness to the national and regional discussions. I don't see any other way that researchers will be given that space apart from claiming it, even forcefully if need be.

We need science parks, science museums and science libraries. We need increased interactions with the developed countries and especially those with their economies in transition. We need more seminars, talks and exchanges with scientists and experts in promotion of science and technology from other countries to come and talk to us. Don't just send few people to go and visit them, but bring them here to talk to our university students, our youths, private sector, teachers and our government officials. Put scientific discussion in the radio and TV. Create cyberspaces for exchanging scientific discussions. Let the inter-university Council work to create these spaces where scientists from the 4 Tigers of Asia (Hong Kong, Singapore, Taiwan and Korea) come and talk to us and hint us on how they broke free from the gruesome vicious cycle of poverty! Let us have science weeks or shows! Let us try to make everybody understand science in a practical way.

Ladies and Gentlemen, As I said earlier, our Scientists need to push science into the heart of national decision making chambers and introduce a culture of using scientific evidence to make decisions. To achieve this, our researchers must develop interest on government moves and create an atmosphere where intelligent debates are held while promoting ***skepticism***[1] in order to allow a thorough analysis of

1 **Skepticism** has many definitions, but generally refers to any questioning attitude of knowledge, facts, or opinions/beliefs stated as facts,[1] or doubt regarding claims that are taken for granted elsewhere.[2] The word may characterise a position on a single matter, as in the case of religious skepticism, which is "doubt concerning basic religious principles (such as immortality, providence, and revelation)",[3] but philosophical skepticism is an overall approach that requires all new information to be well supported by evidence.[4] Skeptics may even doubt the reliability of their own senses.[5] Classical philosophical skepticism derives from the 'Skeptikoi', a school who "asserted nothing".[6] Adherents of Pyrrhonism, for instance, suspend judgment in investigations.[7]

issues coming from both sides of the debates. Currently, such debates are missing and the few we have lack bold scientific positions. Promoting such debates and use of scientific arguments in political discussions will gradually transform Tanzanians and mostly our leaders towards making judgements out of facts, and not from mere speculations or hear says. What I mean here is for researchers to engage in political discussions at the very beginning and act as a magnifying glass to demystify all underlying potential risks and benefits regarding particular options, and put forward intelligent recommendations. Such analyses should always respect scientific neutrality so that they generate arguments that unravel all possible causes of inefficiencies often coming from the existence of power imbalances, economic biases, conflict of interests, ignorance, or misrepresentations in the decision making machinery. I dream of a time when I will witness the media full of intelligent discussions supported by scientific arguments involving different universities in the country around a particular political issue. Where these debates and stand points are sustained for a reasonable period of time, until they inspire a public outcry for a change!.. and in the end, the government listens! That will be the day!

I am not talking about politicizing science because politicizing science is a cardinal sin in development. I am talking about Scientists taking a bold step to leave their sanctuaries and operate closer to the people where they take up a very important role of always keeping the bigger picture alive and visible for all Tanzanians to focus on. And they are expected to do this without compromising the dignity and principles of science. For example, when the decisions to massively import power-tillers, to introduce the input voucher system, to roll-out kilimo kwanza, etc., scientists had a role to stimulate public discussions using scientific data showing the need for deeper analyses before such decisions were made. The debates would have opened discussions covering a wide range of issues and work out to digest the ambitions and interests of all actors, testing inefficiencies within each actor, making relevant projections, raising critical questions, narrating experiences from similar interventions in the world, and displaying the potential risks and how they can be managed. What I am saying here is for Scientists to take proactive measures to investigate and help decision makers and the public in general to make informed decisions. I am against the culture of waiting until things fall apart or succeed then go in and work to explain what made it fail, succeed, and what was the impact. This is going the *'Consultant"* way! To me Scientists are larger than *"consultants"!* Consultants wait to be asked to carry out a specified assignment within specified terms of reference. But you are Scientists who make continuous observations, investigations and discoveries. You are a Scientist with or without specific terms of reference. You observe, see issues and do scientific inquiries. To me that is a little pond, which if overlooked can trap even giants of scientists!

Ladies and Gentlemen, Scientists and Researchers will manage to play this important transformative role if they accept to take a wider view of development and put society at the centre of their pre-occupations. This includes penetrating the socio-cultural webs that surround ones area of academic specialization. If this is attained, scientists will be able to creatively promote domestication of relevant technologies and practices in manners that enlighten our society. Indeed this will be a big milestone towards using science and investigative arguments to illuminate our development paths. By adapting a wider view of development, researchers can aspire to establish more linkages with the government and mostly with private sector. Universities could see the possibility of adding a new role of researching specifically for industries on top of the current traditional research aiming to contribute to basic knowledge and teaching roles. For example, University-Industry Linkages (UILs) are quite popular now in the world (E.g. The linkage between University of Agriculture Abeokuta-UNAAB and Nestlé Nigeria

and later with IITA on soybean since 1996) have proved to be very instrumental in technology transfer and increasing profitability in agribusiness. I know you know this better than me.

Currently, the rate and direction of technological advancement in the north is said to be powerfully influenced by market and regulatory incentives-based policies. However, in the south public investment and different forms of incubation and facilitation are still very crucial in stimulating and enabling innovation, as well as in pushing technological changes. Therefore we need to press on the role of the government in funding activities and programs that aim to stimulate and promote innovation in the country. For example, we need to build a strong case for the government to establish strategic innovation funds where government will be putting money that can be used to promote use of new technologies to create jobs and promote innovation. Such funds are now common even in the developed countries especially after the depression. For example, UK has recently established a 1.5billion GBP Regional Growth Fund (RGF) where money is given to private sector to create jobs. About 50% of the money is already working to revive the British economy. The fund is purposely big and strategic, and is given to both small and medium scale private businesses like bakeries, surgeons, food processors, etc. By using this fund, the British government is using every 6pounds received as tax to create jobs. I don't see why our government shouldn't borrow the leaf!

However, the problem that we might face is diligence in managing the fund and the ability of the funded businesses to generate profit. To me this is where strong linkages with researchers becomes handy, because if well planned, scientists can guide decisions on technology selection and in ensuring use of proven practices to ensure profitability and growth in these businesses. This can be complemented with business skills and mentorship programs.

Ladies and Gentlemen, And how do we awaken our society? Our society needs re-awakening by all means. We need new hope, new promises from practical people like Scientists. Science can be our new hope and not empty political promises anymore. We need a new wine, in a new bottle.

We need knew messages in the media that will gradually instil a culture of receiving and processing scientific knowledge. It is high time that our Researchers consider developing partnerships with private sector and come up with a comprehensive media plan to cover the entire country. Let us aim for more scientific interviews in the media to supplement the overly presented political discussions. Develop a special media group for science and build their capacity to the world class standards. The use of FM and community radios should be given priority. Let no one underestimate the power of media in the world of today. Fortunately, internet provision is expanding and social networks are becoming popular in Tanzania. Our youths are in love with Facebook and Twitter and it is becoming easily accessible even in relatively cheaper handsets. Therefore, these are some of the tools that we can use to reach the public especially youths. Let us use it, throw in scientific issues and attract our youths to discuss science using tools they love most. Let us hear science more often and slowly we will embrace it as a way of life.

We also need to innovate on how to promote quality of science teaching in secondary schools. The current situation is pathetic with less than 32% of our secondary schools with proper laboratories for Physics, Chemistry and Biology. The government has recently abandoned the 'Alternative to Practical" approach to teaching science practical in secondary schools, an approach which leaves behind a group of poorly trained students and teachers, while at the same time leaving teachers with no alternatives. Soon universities will be receiving science students who have never set eyes on Bunsen burners and who have

never done any science practical. This is a very serious problem and as Tanzanians we need to do something very urgently. For example, in September 14th this year, our Treasury signed an Agreement regarding the 3rd debt relief[2] from the French Government worth 4.1million Euros, equal to TShs. 9.2 billion[3] promising to invest all of it in education and specifically in ensuring an adequate supply of teaching laboratory facilities and services to all secondary schools in the country. With this information, all Tanzanians and especially the university community should make a close follow up with a keen interest. Doing nothing on this is being irresponsible.

As a long term strategy to promote science and technology in the country, SUA can consider establishing a Science and Technology Unit which will be changed by conducting analyses regarding society's demand for technology, their response, gaps, challenges and impacts and use this data to educate the public. Both undergraduate and postgraduate students can be used to make regular analyses meant to inform the public on the progress we are making in using science. It must be noted that I am not referring only to technology transfer issues but rather taking a much more profound look at interactions between science and technology and the society. Later, offering an MSc in Science and Technology which is now developed in most of the renowned universities in the world can be considered.

Ladies and Gentlemen, I understand that resources are very important in all what I have talked about. Somebody said, people will only fund what they are made to believe as important. So we need to re-justify the relevance of research to our government. I also think it is high time that we explore the private sector for raising fund for specific activities. Let us borrow a leaf from the entertainment sector on how they develop strategic partnerships with the private sector and fundraise at a win-win deal. For example, on the media issue, I believe working with the private sector is very possible through advertisement and airtime purchases for public engagement. If they do that for the entertainment sector, I believe they can do it for a noble course such as science. I will personally be happy to be involved in making this attempt. Let us put our ideas right and look for the right partnerships. Other countries are taking advantage of the CSR (Corporate Social Responsibility) regulation, where every liability company is supposed to return to the community a certain amount of the profit. And since not many people approach the big companies in Tanzania with noble ideas, we end up seeing them doing very little.

So let us be proactive and work with other organisations to do what we have never done before. The universities do not have to do this on their own, but they can work through partnerships with other actors. Nigerian Universities are already far in developing such partnerships with the Private sector.

And Finally Ladies and Gentlemen, Before I close my speech, allow me to hand in my appeal to all Tanzanian Scientists and Researchers. Please hear me out.

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2 The first Agreement was concluded in 2003 amounting to Euro 4.25 Million (equivalent to TShs. 5.124 billion), and the second one was concluded in 2007 amounting to Euro 4.35 Million (equivalent to TShs 7.5 billion). According to the Treasury report the amount obtained from the two debt relief Agreements, a total of Tshs 12.624 billion were used to support implementation of the Primary Education Development Programme (PEDP) and the Secondary Education Development Programme (SEDP).

3 See http://www.mof.go.tz/mofdocs/msemaji/STATEMENT%20THIRD%20DEBT%20RELIEF.pdf

The world is currently witnessing breath-taking advancements in both nanotechnology and in non-nanotechnology. We have seen science transforming the human life from using human labour, to animal power, to steam engines, to electrical and petrol engine, and now the digital technology. We have seen science saving lives through vaccines, pharmaceutical, sophisticated surgeries and procedures, and now with the prospects of stem cell technology. We have seen science through spectacular engineering designs and works bringing comfort, increasing mobility and ability to communicate; expanding ability to traverse deep waters and explore the space; increasing security and protection and relieving people from drudgery of life; We have seen science improving productivity, improving quality, increasing efficiency in work and in business and bringing understanding of life, biodiversity, and that of the entire cosmos; and We have also seen science transforming the economies of the so called 4 Tigers of Asia i.e. Hong Kong, Taiwan, Singapore and Korea, just before our eyes. Then we then have no reason to doubt that, even without re-inventing wheels, Tanzanians can also benefit from such greatness of science and be able to lead a decent and dignified life. We just need to go for it.

My dear Scientists, Our country needs Scientists and Researchers who are honest to themselves, and who are sincere of their role to serve communities; Researchers who are not mere opportunists, but with a continuous skilful flow of investigative zeal; Researchers who motivate themselves to go an extra mile for the sake of science and their society; Researchers who push themselves beyond personal gains and achievements; Researchers who take risks for a greater purpose.

We want our Researchers to gain control of our economy through a demonstration of hard work, intellect, commitment, creativity, patriotism, morality, fearlessness and a display of outstanding loyalty to knowledge and constructive arguments that come from a deep desire to serve.

We want every Professor to be recognised and appreciated by Tanzanians for their outstanding service to the community in specific sectors of our economy. **We want to know them as of our own!** We want every one of them to leave a legacy. A legacy that is shaped by a self-less spirit of commitment to science and service to mankind; It is this legacy that will be used by our future generations as a solid foundation on which they will create their innovation trajectories.

My dear Scientists,
We need you to guide us through this journey out of poverty and misery.
We have been poor for too long. Too long that poverty is now consuming us to extinction.
Look at how poverty makes us render our youths useless. In fact it is making us futureless!

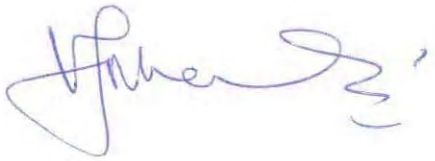
As a nation we want you to help us embrace Science and Technology in a manner that suits us,
That fits us, and which is for us. Please do not leave politics alone to lead us.

Go out to the world. To the secret places of nature-to the molecules, to the atoms, to the genes;
To the libraries of the universe and to the higher bodies of Intellect;
To the ancient valleys of knowledge and to the highest mountains if need be.
Go to the moon, to the stars and even to the todays' Modern societies and search on our behalf!

We beg you to use your love for this country, your consciousness, your intellect, your instincts, your skills, your God-given intelligence and your entire being, to search for knowledge.
Knowledge for your people.

Then come and engage with us, work with us, for us and for our generations to come.
Not because you have to, but because you desire so.
Transcend your selfish selves and serve Tanzania with a passion;
Because that is why you were born among us, and with that special self!

THANK YOU FOR LISTENING!



VERA FLORIDA MUGITTU,
DAR ES SALAAM.
NOVEMBER 24TH, 2011
vera@muvek.co.tz