THE AFRICAN REGIONAL YOUTH CONGRESS AND EXPOSITION ON YOUTH EMPLOYMENT/WEALTH CREATION:

OPPORTUNITIES IN AGRICULTURE, SCIENCE AND TECHNOLOGY AND YOUTH LEADERSHIP FOR HIV/AIDS PREVENTION

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A report of the 2005 *African Regional Youth Congress and Exposition on Youth Employment/Wealth Creation: Opportunities in Agriculture, Science and Technology and Youth Leadership For HIV/AIDS Prevention* held at The Hilton, Nairobi, Kenya from June 20 to 23, 2005.

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ABOUT THE AFRICAN TECHNOLOGY POLICY STUDIES (ATPS) NETWORK

The African Technology Policy Studies Network (ATPS) is a multi-disciplinary network of researchers, policy makers, actors in the private sector and other end users interested in generating, promoting and strengthening innovative science and technology policies in Africa. With a regional secretariat in Nairobi, the network operates through national chapters in 23 countries, with an expansion plan to cover the entire sub-Saharan Africa.

One of the objectives of the network is to disseminate research results to policy makers, legislators, the organized private sector, civil society, mass media and farmers' groups through publications, dialogue and advocacy. Among its range of publications are the Working Paper Series (WPS), Research Paper Series (RPS), Special Paper Series (SPS), Technopolicy Briefs and Workshop Reports.

ATPS is supported by a growing number of donors including the International Development Research Centre (IDRC), the Carnegie Corporation of New York, the Rockefeller Foundation, the World Bank, the OPEC Fund, Ford Foundation, Coca-Cola Eastern Africa, the African Development Bank, *info*Dev and the Royal Dutch Government.

ABOUT THE TECHNICAL CENTRE FOR AGRICULTURAL AND RURAL COOPERATION (CTA)

The Technical Centre for Agricultural and Rural Cooperation (CTA) was established in 1983 under the Lomé Convention between the ACP (African, Caribbean and Pacific) Group of States and the European Union Member States. Since 2000, it has operated within the framework of the ACP-EC Cotonou Agreement.

CTA's tasks are to develop and provide services that improve access to information for agricultural and rural development, and to strengthen the capacity of ACP countries to produce, acquire, exchange and utilise information in this area. CTA's programmes are designed to: provide a wide range of information products and services and enhance awareness of relevant information sources; promote the integrated use of appropriate communication channels and intensify contacts and information exchange (particularly intra-ACP); and develop ACP capacity to generate and manage agricultural information and to formulate ICM strategies, including those relevant to science and technology. CTA's work incorporates new developments in methodologies and cross-cutting issues such as gender and social capital.

FOREWORD

"*No one is born a good citizen; no nation is born a democracy. Rather both are processes that continue to evolve over a lifetime. Young people must be included from birth. A society that cuts itself off from its youth severs its lifeline*."

In 1998, UN Secretary General Koffi Annan in addressing Ministers responsible for youth made this statement as he cautioned nations and the international community not to marginalize the youth. By 2002, youths began to take action so that they could be heard. They said, "*We are children whose voices are not heard. It is time we are taken into account*".

In 2004, CTA provided the youth from Africa, Caribbean and the Pacific regions with the opportunity to speak out. The Centre, accepting that youths are the best experts when it comes to understanding and articulating the issues affecting them, hosted an expert consultation for youths from several ACP countries. The Observatory provided the ACP youth with a forum to discuss the role of Information and Communication Technologies (ICTs) in linking rural youth with the rapidly changing realities of modern life. The youth then presented their recommendations to ACP-EU ambassadors and policy makers at a specially arranged meeting in Brussels. There, the ACP youth eloquently stated that they have limited options to actively seek and share information and to communicate with others because of the isolation and material poverty of their communities. They encouraged the ambassadors to help them secure an enabling environment to advance their interaction in the wider society.

The success of the 2004 CTA Youth Observatory set the stage for this 2005 collaboration between the CTA and the African Technology Policies Studies Network for an African-wide Regional Youth Congress on "Youth Employment/Wealth Creation: Opportunities in Agriculture, Science and Technology and Youth Leadership for HIV/AIDS Prevention". The future of agricultural and rural development in ACP countries lies in the hands of the youth who the societies marginalize. What better mechanism than to give the youth the chance to elaborate the issues that are preventing them from realizing their potential and overcoming the constraints in agriculture, using science, technology and innovation as the launch pad? CTA was not disappointed with the Congress as the youth clearly demonstrated why there is need to have confidence in them. They have called on international organizations to empower them; for governments to implement policies to facilitate greater application of science, technology and innovation for socio-economic development of Africa; for institutions of higher learning to play a major role and for the media to focus on the plight of youth in Africa and ST&I for turning around the situation of Africa's youth.

CTA will continue to empower ACP youth to increase their participation in decision making and provide opportunities for them to network not only with their peers but with other key strategic partners including universities and government agencies. The Centre will also seek to ensure that ICTs are fully integrated into rural youth policy.

Hansjörg Neun
Director, CTA

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

ACP	Africa, Caribbean and the Pacific
ARDC	Agricultural Research Development Centre
ATDF	Agricultural Technology Development Forum
ATPS	African Technology Policy Studies Network
CBUD	Centre for Biotechnology and Utilization Development
CNN	Cable News Network
CTA	Technical Centre for Agricultural and Rural Cooperation
CYMMIT	International Maize and Wheat Improvement Centre
EU	European Union
GIS	Geographic Information Systems
GMO	Genetically Modified Organisms
HQCF	High Quality Cassava Flour
HYV	High Yielding Varieties
ICTs	Information and Communication Technologies
IPGRI	International Plant Genetic Resources Institute
KARI	Kenya Agricultural Research Institute
KNUST	Kwame Nkrumah University of Science and Technology
NACC	National Aids Control Council
NEPAD	New Partnership for Africa's Development
NARO	National Agricultural Research Organization
NEPHAK	National Empowerment of People Living with AIDS in Kenya
NGOs	Non Governmental Organizations
NIC	Newly Industrialized Countries
PORT	Promotion of Rural Technology
R&D	Research and Development
SMEs	Small and Medium Enterprises
SSA	Sub-Saharan Africa
S&T	Science and Technology
ST&I	Science, Technology and Innovation
STPC	Science and Technology Policy Council
TARDA	Tana River Development Authority
UN	United Nations
UNCST	Uganda National Council for Science and Technology
UNICEF	United Nations Children's Fund
VCT	Voluntary Counseling and Testing

1.0 INTRODUCTION

The mission of the Technical Centre for Agricultural and Rural Cooperation (CTA) based in the Netherlands is to strengthen information and communication management capacities of the African Caribbean and Pacific (ACP) agricultural and rural development organizations. CTA also endeavors to develop policy and institutional capacity and enhance science and technology (S&T) policy dialogue in these countries. Consequently, the Center collaborated with the African Technology Policy Studies Network (ATPS) and the National AIDS Control Council (NACC), Kenya, to convene a meeting for African youth representatives and leaders to reflect and discuss the creation of employment and wealth.

The mission of the ATPS is to improve human and institutional capacity for technology policy formulation, implementation, research, analysis, assessment, monitoring, evaluation and dialogue. The vision of ATPS is to become a centre of excellence and brokerage between S&T policy researchers and implementers in sub-Saharan Africa (SSA).

The corporate mission of the NACC is to reduce the escalation of HIV/AIDS infections, improve the quality of life for the infected and affected and mitigate the socio-economic impacts of the epidemic. The objectives of the Council are to reduce the numbers of HIV infections among vulnerable groups and the general population; improve the treatment and care, protection of rights and access to effective services for the infected and affected; and to adapt existing programmes and develop innovative responses to reduce the impact of the epidemic on communities, social services and economic productivity.

The collaborative CTA/ATPS/NACC Youth Congress and Exposition on *"Youth and Employment/ Wealth Creation: Opportunities in Agriculture, Science, Technology"* and *Youth Leadership in HIV/AIDS Prevention* brought together youth leaders and representatives from national, regional and international institutions and civil society who are committed to promoting and applying agriculture and science, technology and innovation (ST&I) in meeting social and economic development goals in Africa. The meeting was, more specifically, aimed at educating the youth on how to tap the potential of ST&I in agri-food chains to create wealth and employment in Africa. The congress benefited from the imagination, creativity and innovativeness of youth dovetailed with the experience, guidance and mentorship of the resource persons in seeking solutions to the persistent challenges of employment and wealth creation in Africa.

1.1 Congress Objectives

The overall objective of the congress and exposition was to create awareness among the African youth on alternative employment opportunities in agriculture, science and technology and sensitize them about strategies, which can be used to exploit such opportunities.

The specific objectives were:

- To share experiences in harnessing opportunities in agriculture, science and technology to create employment and wealth and build self-reliance of African youths to adopt strategies, which can be used to identify and exploit such opportunities
- To expose the youth to practical applications of S&T currently used to transform agri-food production, processing and marketing chains
- To create opportunities for peer networking among the African youth and use it to popularize ST&I for socio-economic development in Africa, focusing on the agri-food chain

- To expose the youth to S&T policy-making and determine roles and opportunities for ensuring their involvement in the process for greater advocacy and adoption of their concerns
- To provide a forum for peer education on HIV/AIDS and behavioural change amongst the youth to reduce the rates of new infections

1.2 Expected Outcomes

The congress and exposition realized the following outcomes:

- African youth exposed to opportunities for creating wealth in the agricultural sector through greater application of ST&I;
- African youth encouraged to tap existing and emerging technologies for creating wealth and employment through exposure to successes gained from case studies in Africa and newly industrialized countries (NICs);
- African youth committed to promoting the relevance of ST&I in Africa's development and lobbying governments, non-governmental organizations (NGOs) and the private sector to support their quest to expand opportunities for creating wealth in agriculture through greater application of ST&I;
- African youth and youth organizations linked to existing networks, such as ATPS and the New Partnership for Africa's Development (NEPAD) with the aim of strengthening youth lobby groups for conducive ST&I policies and support programmes promoting ST&I for socio-economic development in Africa, which benefit youth;
- African youth forming a cadre of youth leaders who can act as peer educators, advocates and grassroots champions for better control and management of HIV/AIDS; and
- A workshop communiqué capturing key resolutions for dissemination through the media in Africa and submission to the relevant government agencies and representatives of the international community.

1.3 Attendance

The conference attracted over 70 participants from Botswana, Burkina Faso, Cameroon, the Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe. These participants represented:

- Scientific research institutions
- Public and private universities
- Government departments and ministries
- Private companies
- Non-governmental organizations
- Youth organizations (e.g. the African Youth Parliament)
- International organizations

Resource persons were also drawn from the various sectors listed above. Participants were selected based on gender balance, demonstrated leadership roles and to reflect diversity of stakeholders in agriculture, science and technology.

1.4 Delivery methodology

The main delivery methodology emphasized interactive learning and experiential sharing involving the following:

- Essay competition (pre-runner to the meeting)
- Plenary session papers
- Questions and discussions
- Working groups
- Field trip

COMMUNIQUE OF THE AFRICAN REGIONAL YOUTH CONGRESS AND EXPOSITION ON YOUTH EMPLOYMENT/ WEALTH CREATION

Youth leaders from national research institutions, universities and non governmental organizations (NGOs) from 21 countries in Africa met in Nairobi, Kenya from June 20-23, 2005 to deliberate on strategies for tapping the potential of science, technology and innovation (ST&I) in agri-food chains to create wealth and employment for youths in Africa. The youth leaders also addressed the issue of HIV/AIDS prevention and management and identified strategies, which they could share with their communities to stop the spread of this disease.

1. The youth identified major challenges, which are preventing them from achieving their full potential as follows:

A. POLITICAL

> political instability, conflict and tribal clashes, which limit availability of resources and investmentsdestroy and restrict opportunities for the youth;

> lack of political commitment resulting in lack of policies for the youth and limited budgetary commitment;

> lack of youth participation or involvement in governance, which limits their voice in formulating and implementing policies, which could benefit them; and

> corruption, which limits the availability of resources for sustainable programmes and also restricts the youth's access to education, jobs and ability to create wealth.

B. EDUCATION AND INFRASTRUCTURE

> high illiteracy and limited opportunities for educating youth at all levels: primary secondary and tertiary;

> high cost of training and limited opportunities for industrial attachments;

> outdated curriculum and emphasis on theory without adequately providing practical experience;

> limited use of ICTs and lack of policies, which could improve access and affordability of information;

> inadequate educational facilities including ICT infrastructure, libraries, books computers and Internet access, which restricts access to up to date and relevant information; and

> lengthy and costly process for obtaining postgraduate degrees and lack of recognition of importance of research and development for socio-economic development.

C. FINANCIAL

> inadequate financial resources to support training and skills development;

> limited availability of start-up capital to support young entrepreneurs; and

> limited investments by government and the private sector in the youth.

D. SOCIO CULTURAL

> Attitude of youth, in general, needs to change so that they become more self-reliant, more serious and more forward thinking;

> lack of confidence in youth because society does not value the potential of the youth and judge them by age and appearance;
> lack of mentors to provide guidance and support; and
> traditional and religious practices, beliefs and norms, which reinforce gender imbalance and restrict adoption of modern ideas and technologies threatening traditional practices.

2. The youths further identified the challenges, which are preventing Africa from using ST&I for creating employment as follows:

A. POLITICAL, PUBLIC AND INSTITUTIONAL

> Lack of policies and limited institutional framework to ST&I

B. EDUCATION AND KNOWLEDGE

> Limited access to education and lack of investments in developing a knowledge society

C. INFRASTRUCTURE

> outdated and poorly equipped schools, universities and research facilities, and national industrial plants;
> unreliable communication and transport networks including telecommunications, roads, ports and airports;
> financial and socio economic problems, which cause governments to focus on short term measures as opposed to investing in ST&I as a strategy for development.

3. The youth identified several factors, which are preventing them from participating in the S&T policy making process as follows:

> lack of information, exposure and expertise;
> inability to participate in government because of age restrictions;
> culture and tradition;
> bureaucracy and political problems;
> inadequate networking and linkages, which restrict ability to form platforms for lobbying government and other agencies; and
> low priority given by African governmentand related institutions to S&T.

4. The youth noted that the HIV/AIDS pandemic in Africa is preventing them from realizing their full potential. This disease has led to:

> job stigmatization and discrimination;
> job insecurity and exploitation and low productivity;
> loss of hope, opportunity and ambition and a rise in the population of orphans; and
> loss of youth as they must take on adult responsibilities.

They further noted that the situation is aggravated because of the high health care cost and the limited resource allocation by ministries of health and youth to support programmes, which target prevention and management of HIV/AIDS among youth.

5. The youth agreed that greater application of ST&I can lead to improvements in agriculture, job opportunities, wealth creation and the prevention and management of HIV/AIDS. The participants recognized the need to empower the youth to participate in the S&T policy making, formulating policies, which affect the youth and facilitate their contribution to the HIV/AIDS campaign.

The following measures were recommended:

> restore the confidence and morale of African youth;
> build capacity through training and orientation seminars;
> encourage and support representation of youth in government;
> build and support youth networks and capacity to lobby;
> strengthen linkages between institutions of higher learning, employers and industry to modernize the curriculum at all levels of school, college and university levels;
> reorient African youth to the new realities for competing in globalized markets; and
> use student bodies constructively to actively participate in the process of change, curriculum development, university/industry partnerships and strengthening the interface between government and youth.

6. The youth recognized that they would need support in achieving their full potential and recommended that:

> International, regional and national organizations and NGO's should help to empower youth and encourage them to participate in decision making.
> Governments should implement policies and enact relevant legislation to facilitate greater application of ST&I for socio-economic development and wealth creation and support African youth in achieving their full potential.
> Institutions of higher learning should play a major role in sensitizing governments and youth and in providing a platform for supporting youths in getting their voices heard.
> Religious organizations should support the empowerment of African youths and help to boost their morale.
> The media should be approached to focus on the plight of youth in Africa and the need to aggressively arrest the spread of HIV/AIDS among them. The media also need to raise awareness of the need for Africa to emphasize ST&I for socio-economic development and wealth creation and turning around the situation of the youth.

7. The youth recognized that they have an important responsibility and role to play in advancing ST&I and preventing the spread of HIV/AIDS in Africa and committed themselves to:

> becoming advocates of change;
> building alliances at national level and with national, regional and international organizations to champion the cause of the youth; and
> changing attitudes, becoming self reliant and encouraging fellow youth to seek information and knowledge and develop skills to transform the lives of youth in Africa.

2.0 DAY ONE: 20 June, 2005

Session one

Opening Ceremony

Chair of the Session, Alex Gacuhi, National Coordinator, ATPS Kenya Chapter

2.1 Welcome remarks, Maurice Bolo, Research Officer, ATPS

Mr Maurice Bolo, Research Officer, ATPS, and conference organizer welcomed the participants to the conference, indicating that the meeting was a culmination of a multi-stage process, which was purposely designed to enlarge the scope of stakeholders' involvement in mapping out strategies to address unemployment and wealth creation among the youth in Africa through science, technology and innovation (ST&I).

Mr Bolo explained the events leading to the conference beginning with the essay competition on the topic, ***Tapping the Potential of Agriculture, Science and Technology in Agri-food Chains in Africa – Creating Employment and Wealth for the Youth***. The essay competition, said Mr Bolo, was followed by a consultative youth meeting in Nairobi in April 2005, which brought together youth representatives and professionals from six different countries in Africa to brainstorm on the theme and focus of the congress and exposition; the conference was largely a product of the consultation.

In his address, Mr Bolo highlighted the potential of agriculture, science and technology to transform Africa from an agro-based economy to an industrial and knowledge-based one, as was the case in the industrialized nations, and more recently, the newly industrialized economies (NICs). However, he wondered why it has not yet worked for Africa. He suggested that the issue be addressed from a different perspective by tapping into the creativity and innovativeness of the youth. "The success of this new perspective requires curiosity, creativity and imagination; it requires us to build consensus and momentum on issues and policies, which affect us most and embark on a vigourous marketing campaign to sell our ideas, first to our peers, and then to the political leadership," he elaborated. Mr Bolo also added that the youth represent agents, beneficiaries and victims of technological development, socio-economic and political changes, which determine their livelihoods in this century and beyond.

Mr Bolo identified two critical challenges facing the youth today as unemployment and HIV/AIDS. He stressed that in sub-Saharan Africa (SSA), the majority of the population live in rural areas where agriculture is the economic mainstay, yet infrastructure is dilapidated and information scarce. Mr Bolo lamented that this situation confines a large segment of the African population, especially the productive youth, to under-employment and idleness.

Mr Bolo also highlighted HIV/AIDS prevalence among the youth in Africa, Caribbean and the

Pacific (ACP) indicating that incidences are higher than in any other areas of the world. "It is estimated that each day, some 6000 youth, globally, are infected with the HIV/AIDS virus, and that every 14 seconds, one other young person joins the list," he explained. He pointed out that there is a connection between unemployment, social exclusion and HIV/AIDS prevalence, making the youth vulnerable to the scourge.

Addressing the importance of youth participation in policy making, Mr Bolo said that the youth constitute about half of the total population of the world, and demographic estimates in Africa indicate that 50% of the population is below 18 years old, representing 16% of youth globally, yet their contribution is ignored. "Quite often, the experts assume that they know what our problems are and they go ahead to prescribe solutions based on incomplete understanding of the challenges facing the youth," he bemoaned. He indicated that such actions relegate the youth to, " an untapped resource, pushed to the margin of public life in spite of their numerical strength." Mr Bolo urged leaders to recognize the potential of the youth in addressing issues, which affect Africa's development.

Mr Bolo concluded that the congress intends to address these issues, among others, and record innovative suggestions on how best the intellect, creativity and energy of the African youth can be tapped and channelled to productive economic development.

He thanked the management of CTA and ATPS, Ms Judith Francis and Dr Osita Ogbu for their contribution towards securing the future of the youth through the congress and exposition.

2.2 Remarks, Judith Ann Francis, Senior Programme Coordinator, Technical Centre for Agricultural and Rural Cooperation ACP-EC (CTA), the Netherlands

Ms Judith Ann Francis, in her opening speech, said that she was proud and encouraged to speak after Maurice Bolo because the consultative meeting and the congress were innovations, which put the youth in charge of the preparation of the meeting. On behalf of the CTA Director, Dr Hansjorg Neun, the management and staff of CTA, she signaled that the centre had high expectations of the African-wide regional youth congress and exposition on, ***Youth Employment/Wealth Creation: Opportunities in Agriculture, Science and Technology and Youth Leadership for HIV/AIDS Prevention.*** Ms Francis conveyed regrets from Dr Nuen, for not being able to join the youth because he was attending the ***81st Session of ACP Council of Ministers*** and the ***30th session of ACP-EC Council of Ministers*** in Brussels and Luxembourg. However, he wished the participants successful outcomes from the congress. She further reaffirmed CTA's commitment to the development of agriculture in the rural areas of Africa, Caribbean and Pacific (ACP) countries through science, technology and innovation (ST&I). She indicated that the youth congress was important because it brought together a wide group of stakeholders to

advance the ST&I policy dialogue and the role, which the critical elements could play, not only on socio-economic development, but turning around prospects for the youth who may be feeling marginalized in a continent, which is endowed with vast resources.

Referring to the song, *Rise Up Africa*, which was sang by primary school children to welcome them to a meeting organized by the Forum for Agricultural Research in Africa (FARA) in Uganda, Ms Francis said that the emphasis was, agriculture, if properly practiced using S&T can help Africa to achieve its food security goals and economic development. Consequently, the congress and exposition provided an opportunity for African youth, young scientists, youth leaders and other professional youth to rise up and take a leadership role in ensuring that greater emphasis and action are taken to turn around the economic situation of Africa through greater application of ST&I.

She noted that the congress was the second regional S&T meeting, which CTA was co-hosting with ATPS in Africa and for Africa, since launching its Science and Technology Strategy Programme in 2003. The first meeting was entitled, ***Enhancing the Science and Technology Policy Dialogue – Innovation for Development***. At that first meeting CTA was mandated to tell the UN Task Force on *Science and Technology 10* to give greater emphasis to tertiary education in agriculture when finalizing their millennium report on S&T. Ms Francis revealed that this was done through direct communication with Prof Calestous Juma based in Harvard University,who was the lead author of the report. Ms Francis quoted from an article dated June 17 on the topic, *We Need to Re-invent African Universities*, by Prof Juma where he argued that Africa's developmental challenges required that African universities change the way they operate and become developmental universities. He further advised that these and other institutions are key players in domesticating knowledge and diffusing it into economies.

Ms Francis informed the audience that Prof Juma was not the only distinguished African who was leading this call. Dr Monty Jones, another distinguished African from Sierra Leone, the Executive Secretary of FARA and the co-winner of the 2004 World Food Prize was working with national, regional and international organizations to ensure that Africa harnesses ST&I to transform agriculture for improved livelihoods and development in Africa. She told the participants that Dr Jones had developed the NERICA rice, which was transforming how rice is grown in Africa and the innovation was already contributing to increasing rural incomes and achieving food security.

Ms Francis announced that CTA was pleased to be associated with these efforts and in having played a role in bringing top policy makers, scientists and engineers, farmers and other entrepreneurs, education experts and other interest groups to deliberate on ST&I issues, which could set a stage in ensuring greater involvement of the youth in realizing their potential. She also said that the seed for the CTA Programme on Science and Technology had been planted in Cape Town in 2002 when the ACP ministers for science and technology met at the ***ACP Forum on Research for Sustainable development*** and made several commitments. These undertaking included providing political leadership leading to policies, which place research at the fore-front of development; increasing current budgetary allocation for research; achieving a minimum investment of 1% of Gross Domestic Product, per annum, over a period of ten years; promoting, popularizing and utilizing S&T; advocating and supporting the Cape

Town Declaration and Plan of Action at national, regional and international levels. They also requested that the ACP states, ACP General Secretariat and the joint ACP/EU institutions, such as CTA, in collaboration with all relevant national, regional and multi-lateral development partners and finance institutions support the Cape Town Declaration and participate in implementing the Plan of Action.

Ms Francis reiterated that the youth congress was yet another example of the centre achieving its mandate. She said that donors and other developmental agencies were also focusing on harnessing ST&I for economic development and increasing competitiveness, indicating that the center is making the necessary budgetary commitments and the EU has already done so. She informed the meeting that CTA's other programmes cut across the information and communication divide to support Africa and other ACP countries to move agriculture foreword. She added that the center focuses on youth, women and HIV/AIDS as crosscutting issues and encouraged the participants to tap their strength in influencing similar organizations.

Ms Francis also declared that CTA was not alone in making the strident call for African stakeholders and policy makers to formulate or update, where necessary, and implement sound ST&I policies, which become the foundation for achieving economic and social development, recognizing that agriculture and rural development underpin economic and social development and cannot be separated from the process.

She affirmed that CTA was grateful for the opportunity to collaborate with ATPS in co-hosting the regional ***Youth Employment/Wealth Creation: Opportunities in Agriculture, Science and Technology and Youth Leadership for HIV/AIDS Prevention*** for dynamizing the youth in Africa to take charge of their own destiny and adopt ST&I strategies to transform their lives, their communities and their countries. She concluded that the center anticipated that participants will be encouraged by the deliberations and reaffirmed CTA's continued support to implementing the recommendations emanating from the meeting.

2.3 Summary of opening remarks, Dr Osita Ogbu, Executive Director, the African Technology Policy Studies Network (ATPS)

Dr Osita Ogbu welcomed all the participants to Nairobi and reminded the youth that they were privileged to attend the important and significant meeting because they had been chosen to represent certain constituencies. He told them that they were attending the meeting to acquire knowledge to use to inform and "indoctrinate" others from their communities. "You are here as a youth leader to acquire knowledge and use it for the purpose of educating others," he stressed.

Dr Ogbu reminded the youth that they are always referred to as leaders of tomorrow. However, he was not sure if they were trained and equipped enough, as future leaders, to deal with the complexities of social and economic issues. He added that the youth had convened in Nairobi to be agents

of change and harbingers of knowledge on science and technology (S&T). He urged them to ask their leaders, through their various pronouncements as student, business leaders or other, to recognize the importance of S&T in economic development and wealth creation. He advised them that rather than ask for money, they should ask for knowledge and ideas because money cannot actually develop a country as such, but ideas can. "If we can translate money into ideas then we will be able to liberate the continent," said Dr Ogbu.

Dr Ogbu observed that there is a large population of young people who attend universities but are not employed on completing their studies. He also noted that the numbers of universities, in Africa, had multiplied but the economies had not expanded commensurately to absorb the graduates. "The quality of education in universities has also declined, affecting the employability of the youth," he said. He urged the participants to look for ingenious ways to improve their capacities beyond what they have learned in the various universities and also expressed his belief that the youth could create their own jobs.

The ATPS Executive Director cautioned the participants that the main intention of the meeting was for the youth to find solutions to the impediments, which affect them and not to give reasons/excuses why things are not working for them. He gave the example of the use of cassava in Nigeria, saying that the tuber has become a product of choice because developed countries in Europe have discovered its efficacy as an alternative animal feed to substitute for feeds associated with the mad cow disease. Because of the popularity of cassava, Nigeria has become the leading exporter of cassava in the world and production of the crop has increased in the country. Dr Ogbu also pointed out an element of S&T in cassava production by illustrating that the president of Nigeria ordered that 10% of the flour ingredient of baked bread should be derived from cassava because the taste is the same as that of wheat flour.

Dr Ogbu reproached the youth for perceiving agriculture as "something dirty that we cannot touch" because of the misconception that an office job is better. He pointed out that with the right knowledge, experience and exposure, many young people can embrace farming and make an honest living from it. He hoped that young people would look at issues of agriculture and agricultural production differently and find the profession more attractive after the congress.

On HIV/AIDS, Dr Ogbu cited statistics showing that the youth are more affected by the pandemic. He was surprised that in spite of the knowledge among young people of the dangers of the scourge the prevalence remained high. "Something is not right because practices and behaviour have not changed," he decried. He told the participants that during the congress more knowledge on HIV/AIDS would be imparted to them so that they in turn would become peer educators. He also said that in the past, HIV/AIDS messages have targeted the older adults but the idea to educate the youth, sensitize them and equip them with knowledge about the virus and send them back to champion the course at work and in schools had become more appealing. He said that the youth would be equipped to become avenues of behavioural change to save lives.

About ATPS, the Executive Director indicated that the Network exists in 23 African countries and urged participants to look for the Chapter offices back home because it would be good to be associated with their activities. He also revealed that ATPS has been in the forefront of training members of parliament and journalists from various African

countries, and advising cabinet ministers of science and technology on relevant policy issues. He pointed out that ATPS provides small grants for scientists to conduct research on areas of S&T, which are relevant to country needs. He summarized the work of ATPS as, "a Network mandated by Africa to champion the course of S&T."

Dr Ogbu lauded the partnership between ATPS and CTA saying that the youth congress was the third activity, which the two institutions organized. Referring to CTA as a like-minded institution with ATPS he said that he was particularly happy with the joint efforts, collaboration and continuing support in organizing the youth congress, a meeting, which would allow the youth to make contact with their compatriots from other countries. He promised that networking and knowledge sharing would continue among the participants beyond the congress.

In conclusion, he said that the message on the relevance of ST&I to development was evangelical because the youth would be converted to convert others, in turn, so that the message is progressive and bears fruits. Dr Ogbu also promised that a monitoring and evaluation system would be put in place to ensure value for money.

Session two

2.4 Overview of Essay Competition and Presentation of Awards

As a run-up to the youth congress and exposition, ATPS and CTA announced an essay competition on the subject, ***Tapping the Potential of Science, Technology and Innovation in Agri-food Chains in Africa – Creating Employment and Wealth for Youths in Africa.*** Youth in sub-Saharan Africa (SSA) aged between 18 and 30 years were eligible to compete. The essays were expected to address the following themes:

- identifying the critical obstacles facing the youth in the quest for employment and wealth creation in Africa;
- exploring how agriculture, science, technology and innovation (ST&I) can be employed to overcome these obstacles; and
- giving practical proposals/suggestions on how to tap the potential of agriculture, science, technology and innovation in agri-food chains in Africa.

The essay competition was advertised on CTA, ATPS and the Agricultural Technology Development Forum (ATDF) websites. Forty-eight (48) essays were received at the ATPS Secretariat and the following judges appointed to evaluate them:

- Mr Otula Owuor, Communications Consultant, Biosafety News
- Ms Elizabeth Obel-Lawson, Scientific Assistant, the International Plant Genetic Resources Institute (IPGRI), Nairobi
- Mr Charles Nyiro, Communications Consultant, World Agro-forestry Centre

The panel of judges appointed Mr Otula Owuor as the Chief Judge and he made a few remarks before announcing the winners. Mr Owuor said that they followed the set guidelines indicating that the essays were expected to have approximately 1500 words and should be based on personal experiences in creating employment opportunities using ST&I in agriculture. The essays were evaluated on content, grammar, flow and credibility to show how much research was done. Most essays, according to Mr Owuor, were well written presenting correct spelling and punctuation, and use of tenses and vocabulary. He commended the good work and the wealth of ideas generated through the essays, saying that if these could be implemented then the continent would have a bright future. He joked that he

belonged to a generation, which believed that studying in developed countries would make one successful. However, it has now been proven that Africa's success lies within Africa. "We are realizing that we have to pull ourselves with our own boot strings," he stressed.

Mr Owuor was saddened that in Agriculture, Africa is still forced to seek for food aid when there is local potential to feed the continent. He encouraged the youth to be more involved in agriculture and ST&I issues to improve economic development in Africa.

Ms Elizabeth Obel-Lawson, Dr Osita Ogbu and Ms Judith Ann Francis presided over the award-giving ceremony. The winners are listed below:

> The winner: **Winnie Alum**, Research Assistant, National Agricultural Research Organization (NARO), Uganda
> Runner-up (second position): **Christine Ndunge Muthoka**, Student, Department of Range Management, University of Nairobi
> Second runner-up: **Philip Mutuma Munyua**, Research Assistant, Kenya Agricultural Research Institute (KARI)
> Fourth position**: William Avoxe Kodjo,** Agricultural Engineering Department, KNUST, Ghana
> Fifth position: **George Kanthithi Chitzede**, Agricultural Research Station, Malawi

The winners received the following awards:

> cash prizes and certificates;
> sponsorship to attend the ATPS/CTA youth congress; and
> publishing of the essays on the CTA/ATPS websites and other publications

2.4.1 Presentation of the top three essays

A. Philip Mutuma Munyua, Research Assistant, Kenya Agricultural Research Institute (KARI), (Second runner-up)

Philip Mutua Munyua defined an African youth as "a young man or female aged between 18-35 years, who has modest to formal education, a winning personality with great potential of turning around every quagmire into potential havens of opportunities."

He identified the challenges, which face the youth as inability to access very basic necessities, such as clean water, productive soils and proper health care and education. He stated that these challenges could be narrowed down and linked to lack of productive soils and capital, which are essential for leading a dignified life, being healthy and achieving economic development. Mr Munyua stressed that productive soils are the basis for alleviating poverty, overarching of all major challenges.

To achieve sustainable development and alleviate poverty, he suggested the following procedures in implementing any agri-food project:

> proper planning;
> setting up good systems;
> mutual accountability by all stakeholders; and
> setting up efficient financial mechanisms.

Mr Munyua discussed the activities of the Kithoka Passions Fruit Project in Meru Central and Embu districts in Kenya, which used ST&I to tap the potential of the fruits in the area to benefit the local population. He gave examples of beneficiaries of the project, which used the increased earnings to support families. He also announced plans to introduce another unexploited plant, the amaranth, which has great demand and can contribute, locally, to improving the livelihoods of most rural farmers who have adequate water for irrigation and good knowledge of crop husbandry. Amaranth seeds are used for making cereals, flour and popcorns. The leaves are used as vegetables for local consumption.

He concluded that quantifiable outputs, namely, increased jobs and wealth can be created for the many youth in Africa and the negative attitude about certain jobs refuted through greater investments in ST&I.

B. Christine Ndunge Muthoka, Department of Range Management, University of Nairobi (runner-up)

Christine Muthoka introduced the profound socio-economic and political problems, which challenge Africa, and specifically sub-Saharan Africa (SSA). These include:

- unemployment;
- food insecurity;
- disruptive conflicts;
- high population growth;
- slow economic growth rate;
- soil degradation deforestation;
- health challenges, such as the HIV/AIDS pandemic; and
- high levels of illiteracy.

She indicated that ST&I are interlinked, adding that economists have identified technical progress as the single most important determining factor for achieving sustainable growth in the region. She also added that developed countries are viewed as progressive because of the advances they have made in scientific research and technological development in agriculture, natural resource management, medicine, engineering and electronics and information and communication technologies (ICT)

Ms Muthoka highlighted the importance of agriculture to economic development based on the following factors:

- It is the basic engine of economic growth.
- It provides staple foods.
- It generates employment.

She indicated that in spite of the importance of agriculture to economic development in Africa, most government pronouncements ignore economic policy and support to the sector. Ms Muthoka said that review of the agricultural sector in the last decade shows that the sub-Saharan region has been facing the following challenges:

- lack of clear economic policy support or guidance;
- perpetual staple food deficit;
- dependency on imported foods;
- uneven balance of trade in favour of developing countries; and
- scarcity of foreign exchange for trading.

Ms Muthoka discussed the case of Southeast Asian countries, including Taiwan and Singapore, which have been propelled by advances in S&T resulting in industrial growth, improved food security and increased employment opportunities. This, however, has not been adopted by the SSA countries, in spite of the obvious importance of agricultural development and growth to these countries. She suggested improving household food security and raising rural incomes as imperatives for overall economic and social development in SSA.

She identified several factors attributed to lack of employment opportunities and limiting people's potential for creating wealth in Africa, including:

- high rate of population growth, which is not corresponding to the rate of economic development;
- poorly developed markets and marketing infrastructure;
- inadequate post harvest handling and processing facilities resulting in high wastage of perishable produce;
- poor infrastructure in rural areas causing the youth to migrate to urban centres to search for non-existing jobs;
- migration of intellectuals to developed countries and more advanced economies leading to brain-drain;
- ineffective education system;
- lack of self-employment opportunities in rural areas; and
- poor political leadership and governance.

The presenter offered the following solutions in tapping agriculture, science and technology to create wealth and employment opportunities:

- initiating an effective education system in agriculture and natural resource management and linking education to social and economic needs of the people; focus should also be on developing and adding value to entrepreneurial skills;
- developing and disseminating emerging technologies, such as ICTs and biotechnology, by researchers, to increase agricultural production and introduce sound resource management;
- encouraging labour intensive investments to create employment;
- initiating sustainable and appropriate development projects, which are supported by the stakeholders; and
- government translating political pronouncements to commitment to agricultural development by providing resources and creating enabling environment through relevant policies.

C. Winnie Alum, Research Assistant, National Agricultural Research Organization, Bulindi Agricultural Research and Development Centre (ARDC), Uganda, Winner

Winnie Alum defined the youth as persons aged between 18 and 30 years. She added that children and youth constitute more than 50% of the population of Africa and the proportion continues to grow given the early mortality of the adult population due to the HIV/AIDS scourge. She also cited the high unemployment figures among the youth at 74 million globally, according to the current International Labour organization (ILO) figures,

representing two-fifths of all unemployed persons globally.

The presenter stated that the age structure of the population and the quality of the labour force are the determinants in the path to economic growth and development, yet young people are two or three times more likely, than adults, to be unemployed and the gravity of the situation is understated in most documents on demography. Of the young people who are employed, many are required to work for long hours, for low pay, often in the informal economy.

Ms Alum indicated that the youth in Africa are working tirelessly to come out of the chronic poverty in which they live but there are critical obstacles hindering success in the struggle for employment and creation of wealth, including:

- subsistence system of agricultural production with nothing left to generate income;
- low level of education, which denies the youth the competitive edge to secure employment or become entrepreneurs;
- negative attitudes towards certain kinds of jobs leaving many young people roaming the streets in search of white collar jobs;
- low level of soil fertility of the agricultural lands;
- ignorance on modern agricultural practices;
- lack of timely and reliable information about available jobs;
- job insecurity;
- low pay/salaries;
- corruption;
- political insecurity;
- sexual harassment; and
- insecure working conditions.

She discussed different ways, which the Bulindi Agricultural Research Development Centre (ARDC), one of the twelve research centres under the National Agricultural Research Organizations (NARO), has used to create employment for the rural communities and enhanced food security in Uganda. The presenter outlined the steps the research centre followed, including:

- group identification and selection to allow promotion of innovation through a focused group of people who share some common objectives;
- identifying an experimental design for selected food crops, for trial on different soil types using the same treatments;
- incorporating indigenous technical knowledge into agricultural production through participatory market research and selection of an income generating enterprise;
- building the capacity of the groups by offering training on group strengthening, soil fertility management, marketing skills, record keeping and cross-cutting issues, such as HIV/AIDS and management of the environment;
- popularizing agricultural technologies through the media to advertise newly released technologies by outlining their attributes;
- commercializing agricultural produce, such as high-yielding varieties, which produce surplus for the market;
- linking farmers to service providers, such as micro-finance institutions, seed companies and other agricultural input providers;
- identifying researchable issues; and
- encouraging innovations.

Ms Alum concluded that there is no area in Africa's development, which is not affecting the youth. Attention and policies, therefore, must be directed to activities and innovations, which can create employment for the youth and promote food security in communities

Session three

Focus on Agriculture, Science and Technology Innovation for Employment and Wealth Creation

Chair: *Ndolo Asasa*, Programme Officer, Youth Agenda, Kenya

2.5 Keynote presentation: The role of science, technology and innovation in wealth and employment creation: The prospects and challenges of the youth in Africa, by *Dr Kevit Desai*, Centurion Systems Ltd, Nairobi, Kenya

Dr Kevit Desai introduced his presentation by stating that while Japan and America are seen as the giants of inventions, Africa is looked upon as a continent of consumers — not innovators. He wondered whether there is anything inherently deficient about Africa that its people cannot produce inventions or technological innovations.

Dr Desai pointed out that most revolutionary inventions started as models or imitations of the real thing, but the spark of invention is rarely nurtured in Africa. Nevertheless, Desai advised that budding talents should be encouraged because technology can be the engine behind development, and wealth creation, raising people out of poverty. Giving examples of Japan and China, he explained that two decades ago these countries were seen as manufacturers of substandard goods but over the years, skills and standards in these nations have developed. "Now when you buy the latest digital camera, it is more likely to be manufactured in China, than it is Europe," he said. He added that, "the jobs — the money — is flowing inexorably to the Far East — allowing the Chinese government to educate its people, and spread the wealth to the poorest corners of the land."

He reiterated that all the great nations of the world have built their empires on the back of invention, saying that in Britain, the industrial revolution preceded the era of colonialism, and in America, the most powerful nation, homage is paid to inventors. Dr Desai explained that on the contrary, Africa has had mixed experiences with attempts to use technology indicating that in the immediate post-independence era, the rush was to build factories, "to make us self-sufficient, to provide ourselves with goods, clothes, cars, like those made in the West." He was saddened that the approach failed, not because trying to establish such a manufacturing base was in itself a bad idea but because it took place in the context of poor government policies, protectionism, which failed to make industries competitive, a low skills base and inability to evolve the technology to suit local conditions. He added that the failure has left a debilitating legacy, which makes most African countries feel alienated from technology. "We feel so far behind the rest of the world that we've almost given up the ability to think creatively about how to use science and technology," he explained.

Dr Desai suggested that key among solutions to these problems is encouraging young people by introducing technical education early in their lives, preferably at primary school. He stressed that universities, in Kenya, should concentrate on general

courses and leave specialized technical courses to training centers with modern facilities and state of the art equipment. In addition, he recommended that industry should employ engineers who have studied the latest trends in new technology at technical institutions.

Dr Desai observed that Kenya must wake up to the challenge of appropriate technical education if the country hopes to achieve the national goal of industrialization by 2020. However, he warned that it would require the involvement of the top levels of industrial management working with universities and polytechnics. "Companies must see technical training as a necessity and not a luxury and establish a strong link with high level academics," he cautioned. He also informed the meeting that currently engineering is not valued as a profession and students who embark upon it end up working as accountants or bankers not for lack of enthusiasm but because of their maths skill. He spoke of an annual exhibition organized by Centurion Systems, an engineering company, which offers a chance for East African students to show their invention to the public. The students are recognized and praised for their work. However, according to Dr Desai, they are yet to move to the next stage of turning a prototype into a commercially viable product.

In addition to lack of encouragement, Dr Desai said that job opportunities are equally lacking and he regretted that given the continent's need for engineering solutions, only a few young people found jobs in their chosen fields. He pointed out that part of the problem lies in the training delivered by the institutions. "Too often our universities are poorly equipped, and have an academic, rather than a practical approach to engineering. Company bosses often complain about graduates' capabilities because their new employees are unable to perform well in a competitive environment," explained Dr Desai.

Dr Desai informed the participants that there are structural problems, which affect industry because only few companies in Africa are ran by engineers or involve them at top level. He warned that sidelining engineering expertise could have a real impact on productivity and suggested a practical, cost effective approach by solving the problems locally and adopting technologies, which suit indigenous needs.

In conclusion Dr Desai urged the participants to network as a region and swap ideas and experiences about problems encountered and problems solved. "If we overhaul technical education, build on our successes, and learn from our failures, collectively, then we have a better chance of creating the kind of wealth needed to ensure the livelihoods of the next generation, where science and technology plays a central part," he advised.

Dr Desai informed participants that Centurion Systems had introduced in the market a bicycle mounted device that would help provide digital communication for the rural folk. The device enables smallholder farmers to communicate with local and international agricultural advisory service providers and suppliers of products. The bicycle mounted power source hopes to take electricity for communications to rural homesteads and save people the agony of traveling long distances to charge laptops and mobile phones.

3.1.2 Questions/discussions/comments

***Q**. Why the bicycle?*

A: The bicycle is one of the most affordable and easy mode of transportation in African because it is easy to use, needs no fuel, and can be used in places with little or no road, for example, a foot path, which is common in most African villages.

***Q**. Africa boasts of a lot of sunshine; why has solar energy not been used to improve agriculture for food production and also as alternative source of energy because the continent does not depend wholly on electricity for energy production?*

A: The technology we have in Africa was developed by the west according to their needs. It is up to us African to come up with alternative energy sources rather than continuing to depend on what we inherited from the colonial era. This is why we must all take up the development of science and technology to improve our countries.

***Question/comment:** It is difficult to persuade African governments to invest in science and technology, more so when you are young. It is difficult to raise funds for such projects and also to convince donors and other concerned parties that you have developed a product, for example, software, which can be used in schools, police station and hospitals.*

A: Most development and technology ideologies are from the west and governments may show little interest in what African scientists have to offer. Africans and African governments believe that all technology from the West is best and prefer to adopt them to what a local scientist has developed.

***Q**: Why is the private sector fearful of adopting innovations by the youth?*

A: The youth have to believe in their abilities and not give up. Young and talented scientists must take advantage of all opportunities, which arise and above all, work hard and show commitment to whatever tasks they take up.

2.6 Keynote address: Information communication technologies (ICTs): Opening new frontiers for youth in Africa, by *Titilayo Olujumoke Akinsanmi*, Programme Manager, Global Teenager Project, Johannesburg, South Africa

Titalayo Akinsanmi, in her speech, advocated for the youth to stand up and make a difference wherever they are. Giving a personal example, she said that Nigeria is a huge nation comprising 120 million people, based on available statistics two years ago. As a graduate of Arts in English and French, she was not sure of the kind of contribution and impact she could make but she realized that there was a group of young people who were determined to create a paradigm shift. The group did not have any political connections or resources to do much but they recognized that they could change the way people think by sharing ideas.

She added that although it may be difficult for her voice to be heard in a population of 120 million people, she could achieve much by talking to people on a one to one basis, and then all Nigerians, then on a global scale. She encouraged the youth that the

current brain drain could be used to the nations' advantage through networking.

Ms Akinsanmi reminded the participants that they are more advantaged than their parents because they have had the opportunity of acquiring decent education. Since the parents were educated, it is natural for them to want to educate their children up to university level. However, there are not enough employment opportunities for all those who have gone to school.

Akinsanmi also encouraged the youth not to be afraid to point out the mistakes of the governments in their respective countries. She also challenged the donors to fund projects, which can be sustained after the funding period is over. She urged the youth to question donors without fearing that they stand to lose funding for future projects. This would contribute to identifying problems and seeking solutions.

Akinsanmi raised other issues including sexual harassment and the spread of the HIV/AIDS scourge. She concluded that the youth cannot make everyone conform to their ideas but as young people, they can try and conform to the right ideas.

Session four

Focus: Agriculture, Science Technology and Innovation for Employment and Wealth Creation/Modern and Indigenous technologies

Chair: Mrs BL Tientcheu Djike, Assistant Researcher, Nkolbission Regional Center, Institute of Research Agriculture for Development (IRAD), Cameroon

2.7 Value addition to agri-produce, an avenue for employment/wealth creation in Africa, by *Francis Kweku Amagloh*, Teaching and Research Assistant, Kwame Nkurumah University of Science and Technology (KNUST), Kumasi, Ghana

Mr Amagloh discussed under-utilization of agri-produce in many African countries. Agri-produce describes products derived from cultivating crops and rearing animals. He indicated that in Africa, agri-produce caters for local consumption and transforming the produce from its raw form to a state that can be consumed is considered as value-addition. He also stated that although agri-processing creates employment, it does not create wealth because most farms are company-owned and the percentage of proceeds from sale of produce returned to farmers is low.

Mr Amagloh explained that in Ghana, agri-produce has been channeled to meet household demands. The products are highly perishable and are sometimes sold cheaply before they spoil. He also suggested that if the farmer is able to control the demand and the market price of a commodity then employment and wealth could be created. Hence processing of agri-produce should be encouraged and facilitated.

Two case studies on processed snail and cassava were highlighted. The presenter stated that though the application of technology for processed snail has not been documented, the Department of Biochemistry and Biotechnology, Kwame Nkrumah University of Science & Technology (KNUST) in collaboration with the Centre for Biodiversity and Utilization Development (CBUD) were working on the project because the product is nutritious – the protein component contains all the essential amino acids and is low in cholesterol; has a high medicinal value including suppression of hypertension and cure for anemia and depression; and is a rare delicacy. Factors that contribute to the poor market value of snails include the drudgery involved in removing the meat from the shell; and lack of appeal of locally processed snail.

Mr Amagloh indicated that utilization of cassava flour; also known as high quality cassava flour (HQCF) in Ghana is low because most bakeries have not accepted it. There is, therefore, a need to mix it with wheat flour for example, at a ratio of 30: 70 to encourage its use locally. The university needed to work more closely with industry. The presenter was of the opinion that the move will increase the demand for cassava and farmers would have a regular source of income, resulting in wealth creation.

The paper recommended the following measures, which countries should take for agri-produce to create employment and wealth:

- policy makers should establish procedures to promote processing of agri-produce;
- institutions should initiate conferences and workshops to stimulate creative thinking by young researchers; and
- governments and donors should develop local capacities and stimulate research in African universities to serve local interests and strengthen international collaboration.

2.8 Opportunities for job/wealth creation in utilization of ICTS in small and medium scale enterprises (SMEs) in Africa: Lessons from Internet use in the Kariobangi Light Industries, Nairobi, Kenya, by *Muriuki Mureithi*, Chief Executive Officer, Summit Strategies Ltd

Mr Muriuki Mureithi presented research findings on a study to assess the use of the Internet by small-scale enterprises (SMEs) of the Kariobangi Light Industries, Nairobi, Kenya. The following steps were outlined to describe the research design and methodology:

- Study design
- Target population
- Sampling design
- Data collection and instruments
- Data analysis

Mr Mureithi presented the research sample description, which includes age of respondents; academic qualification of the respondents; ICT resources for the enterprise; number of employees of the sampled enterprises.

The findings of the research focused on Internet use; Internet awareness; literacy on Internet use; relative cost of Internet use; availability of relevant content; information needs of the respondents and other factors affecting use. Summary of the results shows that:

- Majority of the sampled enterprises had 3-5 employees (87.1% had below 10 employees).
- There was a high awareness of the Internet (64.1%) and out of those 95.1% knew about Internet usage more than a year ago.
- More respondents had skills on Internet use than those actually using the Internet.
- About 80% spent less than US$5 per month on the Internet.

On opportunities for wealth creation, Mr Mureithi indicated that SMEs account for 1.2 million firms in Kenya creating jobs for 3 million people, especially youthful entrepreneurs. He pointed out that the youth who have attained higher education could offer such services as information brokerage, bureau services and training to those in the sector and the populace in general. He also illustrated the contents and format of information needs of different sectors. Large enterprises need broad macro economic data, which is unprocessed while micro-enterprises need specific neighbourhood information because they do not have capacity to process raw information.

Mureithi outlined the various information brokerage models for SMEs as follow:

- ITDG/ITC – www. Oasis.org model
- ITDG/ITC Kenya Oasis. Org model
- ASSIST – EASIBoard Phillipines model
- ASSIST – EASIBOARD – Phillipines model
- Phillipines and Chamber of Commerce and Industry

He suggested that wealth and jobs could be created for the youth through SMEs by building competitiveness of these enterprises by using ICTS.

2.9 Indigenous technologies and wealth creation: A case study, by *Cindano Charles Gakuru*, Legal Officer, Mt Kenya Organic Farmers Association, Kenya

Mr Gakuru defined "traditional knowledge" as a term encompassing traditional knowledge, innovations, technologies and practices. It includes a broad range of subject matters, such as traditional agricultural, biodiversity-related and medicinal knowledge and folklore. He further explained that in the current context, the term "tradition-based" refers to knowledge systems, creations, innovations, technologies and cultural expressions, which have generally been transmitted from generation to generation and are regarded as pertaining to a particular people or its territory; have been developed systematically and are constantly evolving in response to a changing environment.

Mr Gakuru also defined "traditional technologies" as processes and products, which have been valuable sources of technology even before western industri-

alization. They include:

- Agriculture, food production, processing and preservation and brewing
- Water procurement and storage
- Health and medicine, plant and animal breeding, forestry
- Engineering
- Energy
- Architecture
- Textile, pottery, ceramics, leatherwork; cosmetology
- Jewelry
- Music

He highlighted the following traditional technologies (knowledge) in various communities, among others:

- The *Hoodia* plant: the San tribe has used the roots of this plant to suppress hunger/appetites during hunting expeditions. Currently, a refined appetite suppressant marketed as Hoodia in the USA market sells for $30.00 per 30 capsules.
- The *Cunani* bush: The Wapischana indigenous communities of the Amazon basin, along the Brazil-Guyana border have been known to use the *Cunani* bush, a toxic plant, to catch fish. The leaves are chewed and thrown into the river and the fish within the vicinity are killed. These fish can be eaten immediately without alteration to the taste and no side effects to humans.
- The *Agave* plant: Tequila is an alcoholic drink consumed by the ethnic groups living in the arid highlands of Central Mexico. The drink is derived from fermented and distilled sap of the *Agave* (also called *Maguey*), an indigenous plant of the area. Archeologists say that the *Agave* has been cultivated for at last 9000 years using traditional methods passed down through generations.

He stated that African scientific and technical processes behind the various inventions have not been adequately recognized. Mr Gakuru explained that lack of incentives discourage dissemination of information on innovations to the general public. He added that although customary laws protect the improved varieties of innovations because it resides with kinsmen and is passed on among community members, they are not compensated monetarily for this knowledge, as is the case in the west. This situation prohibits investment in new innovations.

Mr Gakuru discussed the role of modern intellectual property regimes in removing the secrecy shrouding traditional technologies and rewarding the innovator by making the process lucrative through monopolistic and exclusionary patent rights. However, he pointed out the drawbacks of intellectual property rights (IPR) protection as the debate whether a product derived from traditional knowledge could be rightly called an invention. He also said that there are complications arising from differences in western and indigenous legal concepts, which make IPRs impractical in protecting the knowledge from local communities.

He concluded that traditional processes should be an important aspect of the education curricula. The various communities would be able to learn more about traditional innovations and then modify them to suit current lifestyles.

DAY TWO: June 21, 2005

Session One

Chair: Mr Zelalem Wudeneh, Senior Information Expert, Ethiopia Science and Technology Commission

FOCUS: Agricultural Science, Technology and Innovation

3.1 Agricultural biotechnology and wealth creation in Africa: Prospects for the youth. The case of the Tree Biotechnology Project in Kenya, *by Maurice Bolo*, Research Officer, ATPS

Mr Maurice Bolo began by emphasizing that biotechnology was not new to Africa and that over the years Africans have used biotechnology in one form or another. He pointed out that biotechnology can be traced back to 10 000 BC when man begun domesticating crops based on selection of desired traits. He went on to explain that by 6000 BC the Egyptians were already using fermentation in beer brewing and in 1960s, the development of high yielding varieties (HYVs) of rice and wheat championed by the Rockefeller and Ford foundations in Mexico led to the green revolution.

Mr Bolo clarified that biotechnology is erroneously equated to "genetic modification" which has generated much of the controversies surrounding the subject. He explained that modern biotechnology employs recombinant-DNA technologies to transfer specific gene sequences from one organism to another. While this has benefits, it also carries a number of risks, which must be evaluated carefully on a case-by-case basis. He concurred that modern biotechnology was a more precise method of breeding than the laborious traditional plant breeding methods.

Mr Bolo then introduced the status of biotechnology in Kenya by highlighting the opening of the US$ 12 million biosafety greenhouse at the Kenya Agricultural Research Institute (KARI) Biotechnology Center in June 2004 by his Excellency, Mwai Kibaki, the President of the Republic of Kenya. He quoted the President as having said that "Kenya will strengthen the existing biosafety structures, national statutes and international obligations" and that "the government, in collaboration with other players, have produced comprehensive guidelines focusing on modern biotechnology." These, he said, were critical pointers, which signaled the position of the Kenyan government on modern biotechnology.

Mr Bolo also highlighted the on-going research on genetically modified organisms (GMO) in Kenya including:

- *Bt* maize research for insect resistance by KARI and the International Maize and Wheat Improvement Centre (CYMMIT). *Bt* maize had been approved for open quarantine field trials launched on 5 May 2005, making Kenya the second country in Africa (after South Africa) to carry out field testing of GM crops;
- *Bt* cotton research for insect resistance by KARI and MONSANTO at contained trials stage;
- Transgenic sweet potato research for viral resistance by KARI, MONSANTO and the Danforth Center, USA (contained trials);
- GM cassava research for cassava mosaic virus by KARI and the Danforth Center; and
- Rinderpest research for disease control by KARI (contained trials).

He indicated that agri-biotech had positive benefits for farmers in Africa including making their operations more flexible by minimizing drudgery, and also permitting efficient pest and weed control. The consumers could benefit from foods, which are cleaner, tastier and more nutritious. Mr Bolo also said that the process is environmentally sustainable because higher yields reduce pressure on the habitat and consequently the farmland; enhances biodiversity; reduces the use of pesticides and herbicides and natural fertilizers; and run-offs hence improved water quality.

He then presented the case: the Tree Biotechnology Project, which, he said uses biotechnology to address critical needs, such as:

- the overwhelming need for firewood in rural communities; 80-90% of rural populations depend on firewood for 96 % of their energy needs;
- non-availability of fast-growing seedlings to meet the growing demand for the same, with Kenya alone requiring some 60 million seedlings a year; and
- declining forest cover from over-exploitation and poor natural regeneration of trees.

Mr Bolo explained that Kenya's forest cover standing at about 2.3% of its total land area and this is already below international standards and that the annual loss rate of about 3000 ha per year was of serious concern. He said that the tree biotechnology project was an example of a technology transfer partnership worth emulating. Under this arrangement, Mondi Forests Ltd provided the technology, while the International Service for the Acquisition of Agri-biotech Applications (ISAAA) provided technical backstopping and also brokering the technology transfer deal. The Kenya Forestry Research Institute (KEFRI), the Forestry Department, provided field monitoring and pest surveillance while various non-governmental organizations (NGOs) and farmer cooperatives distributed and marketed the technology.

Mr Bolo explained that seedling distribution and purchasing data had shown that small-scale farmers were the largest beneficiaries accounting for over 60% of total seedlings purchased and planted. He added that continuous research had resulted in eucalyptus species adapted to various agri-ecological zones in Kenya, thereby, ensuring wider coverage and applicability.

He specified the following achievements by the project:

- trained Kenyan scientists in clonal forestry in collaboration with Mondi Forests, USA;
- established 17 clonal sites countrywide;
- established clonal forest nursery in Karura Forest, Kenya, which has produced over 4.7 million improved seedlings and clones;
- identified suitable eucalyptus species for Kenya's different agro-ecological zones;
- created full-time employment for 100 individuals and 200 casual labourers; and
- the 4.7 million seedlings/clones have created an additional 2,400 ha of forest cover, translating into 7, 200 jobs.

Mr Bolo concluded that the controversies surrounding modern biotechnologies had clouded the benefits, which would accrue from the non-controversial traditional biotechnologies. He stressed that the tree biotechnology project was not using any genetic modification, yet had demonstrated tangible benefits to the local communities. He advised that African countries should develop regulatory structures (including laws and policies) as well as build their technical and human capacities to reap the benefits from modern biotechnologies.

3.1.1. Questions, comments, discussions

Questions

- *What is the cost effect on countries that may want to grow these trees and GM foods?*
- *What are the effects of GM foods on humans?*
- *Are there mechanisms in Bt modified food that helps to control its effects on humans if there is any reaction upon consumption?*

Answers

First, for the improved eucalyptus trees, data has shown that the highest adoption is by the small-scale farmers in Kenya. Since there is no special credit arrangement for these farmers, it is reasonable to assume that the seedlings are affordable. With respect to GM foods, the technology is highly capital intensive and will require heavy financial investments. Some people have used this point to argue that it will lock out small-scale farmers out of production. That is a genuine concern and may require governmental intervention to assist small scale farmers adjust to the situation.

As regards the effect of GM foods on humans, the basic concern is toxicity and allergenicity. These issues have largely contributed to the controversy on GM foods since they are consumed directly. However, there are scientific mechanisms to abate any such effects. They include avoiding the use of plants with a history of allergens in the design of GM foods and conducting thorough toxicity tests on these foods. *Bt* modified foods are already in production and we may already be consuming them. Most African governments still lack the technical expertise and regulatory mechanisms to effectively screen GM foods.

Q: *Can a poor African farmer afford biotech food production?*

A: There are fears of losing the small-scale farmers if African countries adopt biotechnologies. However, modern biotechnology is highly capital intensive and growing GM foods on smallholder plots for commercial purposes is highly impractical. Even if the smallholders, adopt GM technologies, they are likely to be producing for household consumptions and not commercial purposes. If, however, it is determined that growing GM crops will adversely affect smallholders, then there is an important need for policy interventions.

Q: *Why has modern biotechnology not been introduced to eucalyptus trees?*

Genetic modification has not been introduced into the eucalyptus project for two basic reasons. One is that Kenya has not put in place the requisite policy and regulatory framework to guide the introduction of GM crops. Secondly, tree biotechnology is *learning by doing* and the project is still developing its own capacity for such hi-tech applications. It is encouraging to note that there are on-going plans to introduce tissue culture techniques to speed up the process.

Q: *How will small-scale farmers cope with the need for seedlings to plant during the next season since biotechnology does not produce them?*

A: It is true that traditionally, Africans have always kept seeds for the next planting season. However, the reality is that this practice is fast changing. By the next planting season, most farmers have consumed the seeds due to poor harvests and they are forced to buy some from the market. However, there are policies, which governments can protect farmers

from any adverse effects arising from such arrangements.

3.1.2 Discussions/comments

- Government: - Government must invest more on biotechnology to increase food production in Africa.
- Most countries lack resources to introduce biotechnology in agricultural production

Problem facing the introduction of biotechnology in Africa are listed below:

> Policies are implemented by politicians who do not have support for biotechnology research and development;

> Banks are not willing to lend money to the youth because of fear that the project will fail;

> The private sector do not believe that innovations by the youth are worth investing in;

> Donors prefer short term projects; and

> It is a common belief that Africans are not capable of finding solutions to their problems through technology.

3.2 The role of geographic information systems (GIS) in enhancing agricultural productivity and wealth creation in Africa: Practical applications in Kenya, by *Sospeter Ohanya*, Senior Survey Engineer, Tana River Development Authority (TARDA), Kenya

The presenter, Sospeter Ohanya, discussed how geographical information system (GIS) technology could be used to enhance agricultural productivity to create wealth. He defined GIS as a system of hardware, software and procedures to facilitate management, manipulation, analysis, modeling, representation and display of geo-referenced data to solve complex problems regarding planning and managing resources.

The following functions of GIS were discussed:

> ***Capturing data***: GIS can be used to evaluate the soil types which are suitable for the crops to be grown and also helps in identifying the geographic location for a specific land uses;

> ***Storing data***: the system is useful in storing and retrieving data;

> ***Analyzing data***: Through GIS, queries on interaction of spatial relationships between multiple layers, such as identifying land-use patterns can be addressed; and

> ***Displaying data***: the system is valuable in assessing data for feasibility studies.

The paper focuses on the various fields where GIS is applied including:

> Agricultural research;
> Data integration for farm management;
> Precision agriculture; and
> Agribusiness inputs.

GIS is an important decision-making tool in farm management, which is applied in identifying land use, keeping farm inventory, developing the infrastructure and facilitating management decisions. In agro-business, the system is effective in locating existing and potential customers, identifying local farm supply outlets, evaluating the market, targeting market plans and keeping track of fixed and mobile assets. The presenter gave an overview of the experiences of the Oserian Development Farm, Kenya, in building a GIS database to enhance its production through the following processes:

> shooting of aerial photographs;
> creating a photo-mosaic to develop a continuous image;
> creating layers representing distinct features of the farm;
> integrating the collected data with the base map;
> analyzing data using proximity and neighbourhood analysis;
> picking other information within the farm using GPS and other survey equipment;
> relating/integrating the data with daily production; and
> planning layouts for various proposed development plans.

He indicated that through the exercise, the Oserian Farm had improved the greenhouse layout, the road network and the drainage system. The farm had also laid out new water pipelines and power lines. Task allocations and yields have also been improved.

Mr Ohanya raised the following obstacles to the development of GIS in Africa:

> high cost of GIS especially data collection requiring a high capital input;
> lack of expertise affecting farmers and agricultural technicians prohibiting the use of GIS;
> excessive focus on traditional methods of production in agriculture affecting the adoption and use of GIS; and
> weak links between farmers and other stakeholders in the agricultural sector affecting the dissemination of the GIS.

He concluded that agriculture is the backbone of many developing countries and needs to be boosted to achieve economic growth, wealth creation and subsequently employment opportunities. He added that GIS provides answers to various decision-makers and its use cannot be ignored if substantial growth is to be realized in the agricultural sector and the country's economy.

3.2.1 Questions, comments, discussions

Questions

- *What is the cost of using GIS?*
- *What economic benefit will it be to a small-scale farmer and can it be used on small farmlands considering the cost?*
- *What can be done to help small-scale farmer to be able to make use of GIS in their farm land?*
- *Is it expensive and does it need frequent updating?*
- *Who makes the decision to use GIS on the farm?*
- *What other language can be used to transform GIS and how can one input the data into digital form?*

Answers

> Yes it will be expensive for small-scale farmers and the technology is not suitable for small farmlands, mostly because there is

less veritety of products on the farm; the farm land is small for application of GIS.

> For GIS language the data can be transformed to digital if need be.

> GIS database creation is usually a very costly endeavor. It involves database collection, which in most cases require specialized equipment and expertise. There has been a tremendous reduction in cost of GIS software in the last few years. The cost also depends on the purpose, the nature of the firm and the target population. However benefits outweigh overall costs of GIS data acquisition and management.

> Yes, it will be expensive for small-scale farmer and it is not suitable for small farmland, mostly because there is less verity of products on the farm. There is need for collaboration/partnership between small-scale farmers for them to enjoy the benefits of economies of large-scale operations.

> The GIS databases require regular updates just like any other database systems.

> GIS database is a multidisciplinary area hence nearly all key player have a stake in it.

> Concerning the programming languages, it is noteworthy that there are several GIS software in the market and hence variation in programming languages. The most common languages, which can be useful in script writing include, Avenue, C, c++, Visual Basic, among others.

3.3 Accessing start-up capital for innovative youth projects in Uganda: The case of the L'ogel project, by *Herbert Lwanga*, the Principal Investigator, the L'ogel Project

The paper discussed the challenges facing the youth in accessing financial services for start-up projects in Uganda. Experiences of the L'Ogel Project, which was started in 2002 through the support of the Uganda National Council for Science and Technology (UNCST) to promote the involvement of the youth in wealth creation through science and technology (S&T) were shared. Mr Herbert Lwanga explained that in the 21 century, S&T had become the dominant force, which propels economic development and that African youth should be exposed to the concept early enough.

The L'Ogel Project is involved in the following activities, among others:

> encouraging the involvement of youth in S&T projects for Africa's development;

> encouraging young scientists to develop a passion for applying S&T to community and regional development;

> contributing to the improvement of the livelihood of the African youth through information networks and capacity building; and

> creating employment opportunities for the youth.

To date, the project has developed several technological devices, which are in the market, such as:

- Energy generating system, for example, battery chargers;
- Energy saving systems, such as inverters;
- Public address systems; and
- Computer applications software.

Mr Lwanga discussed the challenges, which the project has experienced when implementing the initial phase, including:

- difficulties in convincing prospective donors to fund S&T projects, especially long-term ones;
- delays in delivery of supplies because of inefficiency of intermediate suppliers;
- negative attitude of public officials who are averse to investing in S&T projects because of the perception that such projects are difficult;
- limited marketing opportunities for the developed prototypes because of dependence on person to person advertisement;
- fluctuating prices of raw materials leading to higher production costs;
- expensive special machines/equipment, such as PCB prototyping machines for the project's need; and
- lack of entrepreneurial, managerial and technical skills by the project promoters.

Mr Lwanga indicated that the following steps will be taken to overcome the challenges:

- intensifying marketing strategies, through media advertisements, to expand the market;
- strengthening partnerships with the key stakeholders to continue developing devices, which are beneficial to all;
- strengthening working relationship with UNCST for support and cooperation in S&T research and development (R&D);
- building the capacity of L'Ogel staff in enterprise management, system designing, assembling and development and software design; and
- initiating cooperation with other institutions to promote S&T among the youth.

Mr Lwanga hoped to steer the project to become a dependable resource centre in S&T in Africa, which will continue to improve the livelihood of young people in Africa.

3.3.1 Comments, questions, discussions

Q: Are your products affordable?

The products are affordable and we are currently testing one of our new products in collaboration with the Ugandan police and the Department of Immigration.

Q: Are your products an improvement of earlier or imported innovations or are they original creations?

We try to add extra into some of the already developed products in circulation because some of them were not made for the African market, for example, power stabilizers.

***Q**: Do you work alone or seek partnerships with other institutions?*

There is team work because what we do requires expertise and commitment from different fields/disciplines.

Session two

Chair: Mr Ndong Ndiogou, Centre Regional Pour L'eau Portable et L'assainis, Senegal

3.4 Science and technology alone are not enough: Politics, policies and linkages for S&T- led development in Africa: What role for the youth? by *Dr Osita Ogbu*, Executive Director, ATPS

Dr Osita Ogbu presentation stressed that science in itself is not enough to eradicate poverty by discussing the following points:

- science generation does not imply science use;
- huge expenditures in science/knowledge generation do not equal knowledge intensive activities/industries;
- science can lead to technology but technology can also be generated from technology; and
- science can lead to invention/discovery.

Addressing the connection between politics and technology, Dr Ogbu said scientists usually believe in the shared assumptions about knowledge, purpose, context and importance of technology and have the tendency to view technology as a separate system rather than a product open to competing accounts.

Dr Ogbu indicated that science could lead to innovation through systems of innovation approach; organization/institutional setup; and the role of different actors. He urged the youth to be agents of change by playing the role of bridge builders and configurational entrepreneurs. He also advocated for the youth to establish a new set of common understandings, which rally politicians and scientists towards agreed socio-technical values and beliefs. Dr Ogbu also said that being part of the process through which science and technology (S&T) configurations are stabilized, transformed and redefined would help to bring the needed change. Other methods included using a collective platform, such as the youth congress to champion certain ideas; deepening one's knowledge of science; and participating actively in the political process for the "good of all".

Dr Osita Ogbu underscored the important role, which S&T has played in the development of Asian economies, including China and wondered why the same has not worked for Africa. He urged African nations to investigate what can be done to change this situation, adding that the success of applying S&T to development will require curiosity, creativity and a lot of imagination. He indicated that the youth were risk takers, and that is why it is important to sell relevant ideas to them because they are also most affected by unemployment. Dr Ogbu said that the belief is that the youth will vigorously market and sell the ideas to their peers and political leadership of the various countries.

Dr Ogbu gave the example of the Finnish model that was successful in transforming a natural resource-based economy into a technological and knowledge driven economy in a short period. The key aspects of this model, among others, included:

- a unique Science and Technology Policy Council (STPC), which is very distinct and innovative in its composition and is Chaired by the Prime Minister, with statutory membership from ministries of education, trade and industry;
- an intelligent follower strategy;
- industry clusters of close operation between firms and organizations;

- linking traditional strength and new technology, for example, forestry and ICTs; and
- innovation oriented public policies.

Dr Ogbu advised the various African actors including state and political leadership, NGOs and the private sector and knowledge institutions to embrace new innovative technologies, ideas and knowledge to move ahead by:

- building capacity through research and training;
- creating a pool of policy entrepreneurs;
- creating S&T advisory councils;
- training policy makers and parliamentarians;
- building alliances between industry; academia and government; and
- educating journalists on S&T issues.

3.5 Legal and policy support for science and technology in Africa: An audit of selected East African countries, by *Ndolo Asasa*, Programme Officer, Youth Agenda, Kenya

Mr Ndolo Asasa described the East African political systems as focusing on "cronyism, pondering, oratory and promises for services." S&T issues, therefore, are invisible to the rich and are relegated to the backseat because it is assumed to be obvious. Asasa looked at the disadvantaged position of S&T through various perspectives as discussed below:

- ***Presence/absence of scientists in the political arena***: The total number of national politicians in East Africa with a science orientation is less than 5%; and the highest ranked are cabinet ministers.
- ***Relationship between education and science and technology***: All East African countries stress the need for education for all. However, most of the energies are directed at providing basic education and not aimed at improving higher level education where the beneficiaries have more capacity to use and apply science and technology. He added that the tertiary and university institutions of learning receive the least attention, as is evident from the lean financial allocations.
- ***Management of administration of science***: management of S&T is confined to a department of a ministry in most East African countries.
- ***Financial/budgetary support***: S&T has no substantive budgetary allocation in all the three countries.

Mr Asasa concluded that the youth must continue to consciously and actively engage in constructive activities to ensure that the pursuit of S&T is employed as a strategy to create wealth.

DAY THREE

Session one

Chair: Ms Lydia Atieno Olaka, Msc. Scholar, University of Nairobi, Kenya

FOCUS: Agricultural Science, Technology and Innovation

4.1 Opportunities for innovative grassroots partnerships for employment and wealth creation in Kenya, by *Ms Elizabeth Obanda*, Project Manager, Africa NOW

The presenter, Ms Elizabeth Obanda, gave an overview of agricultural production in Kenya in relation to wealth and job-creation opportunities for the youth through value-addition processes, which contribute to reduction of post-harvest losses. She indicated that agricultural products are seasonal, perishable and have low market value and as such value-addition could offer the following advantages:

> Attractive packaging of products would give them competitive edge over other similar products in the market; prolong the shelf life of agricultural commodities; convert inedible to edible products; and earn foreign exchange; and
> Using efficient technologies to reduce costs of production and make product competitive in international markets.

The paper defined value-addition to include such process as simple cleaning and washing to remove chaff, stones, dirt; and sorting items into regular sizes for uniformity and quality. Others are milling, extracting, mixing, packaging, reducing size, cooking, baking, frying, drying and fermenting. Youth were encouraged to be involved in value-addition project activities as training or strengthening of farming communities; providing seed and equipment to increase productivity and initiating collaborations with strategic partners. Soap making from the avocado fruit; making jam from paw paw and blending and packing tea, among others, were given as examples of value-addition opportunities.

Ms Obanda advised the youth to seek funding from non-governmental organizations (NGOs), and microfinance institutions after forming groups or establish strategic partnerships, which provide added benefits for accessing funding as:

> it is a prerequisite to funding;
> it increases access to funding, sourcing technologies;
> it increases chances of ensuring sustainability of projects and training/capacity building opportunities; and
> it facilitates dissemination of information and institutionalization of policies.

Ms Obanda shared the experience of Nicholas Olwande, an artisan working for a project called the Promotion of Rural Technology (PORT), which promotes the rope and washer pump. The product is cheap, easy to use, can be locally produced and repaired, and does not require electricity to function. The presenter also gave an overview of Africa NOW, an institution, which seeks to improve access of small-scale producers to finance, training and

appropriate technology through projects, advocacy and partnerships with individuals, businesses, NGOs and public agencies.

4.1.1. Discussions, comments, questions

Questions

- *For how long will you continue writing proposals for youth groups?*
- *Why don't you train them on proposal writing?*
- *Why can't they use you as their consultant?*
- *What's your feeling if your proposals are not accepted?*
- *How do you come in, when young people don't have access to resources to develop themselves or solve their problems?*

Answers

May be someone prefers to work as an individual and is not interested in working as a group or for a project. Make use of your skills and as you write a proposal for another organization carve out a role for yourself. The proposal will facilitate donor funding and you have already created a job for yourself. However, ensure that you have a MOA/MOU with your client to satisfy donor assessment requirements.

If you don't get money, then you can start small, do the things you can within your reach for example you can start a small business, such as making tea, jam, among others without getting into fundraising. This young man I gave as an example has not received any donor funding but he has reached that point where if he applies for funding he will get it because he has a proven track record.

Accessing relevant information is a problem, which affects all of us. As a manager, I am privileged to attend district development community meetings, which are held every three months. I was shocked that Kshs. 500, 000. 00 would be remitted to the Treasury because nobody has written a reasonable proposal to ask for this money. So I went and advised a firm, which trains young people to write a proposal on training *boda boda* (bicycle taxis) operators on traffic rules. In Kenya we are lagging behind in many areas and it is not only the young people who are affected.

Comment

Kenyans have an attitude problem. We want to attain university education and be engaged in white-collar employment. This attitude is encouraged by the education system, which trains us to become pilots or directors of projects. We are not tuned to doing any work to earn a living. Our motivation should be to solve problems and help people reduce poverty. Nature has a way of rewarding people and you will find someone who will eventually support you.

Answers

Don't look at the problems, which are on your path, don't look at the fact that the government is not including you in policy issues, don't look at the fact that you are not credit worthy. You have to start like Dr Desai. You have to start by repairing those bicycles; slowly by slowly people will start listening to you. It is true that young people are not being involved in policy matters.

Answers to the problems of Africa are with each one of us. Let us not wait for an NGO; these organizations are doing what they can and each one of us should also play a role. There are many students who hold Bsc degrees in Agriculture from the University of Nairobi but when they go back to the village, they shun farming and prefer to stay idle waiting for white-collar jobs. The solution to the problem of unemployment and poverty eradication lies with each one of us.

4.2 Bridging the gender gap in agriculture, science, technology and innovation education in Africa: Employment and wealth creation, by *Prof Levi Shadeya Akundabweni*, Ag. Dean, Faculty of Agriculture, University of Nairobi

Prof Akundabweni discussed access to information, options, and employment and the gender gap by linking it to the girl child's career. He also looked at gender disability and marginalization in agriculture with respect to innovation and technology by focusing on HIV/AIDS because the disease is the biggest challenge in agriculture from student, professional and producer levels. He added that wealth creation is challenging because Africa produces just enough for subsistence.

Prof Akundabweni indicated that when the girl child is discussed, professors, politicians and other stakeholders patronize issues because they believe that it is a subject, which can sell, adding that the gap has a loading effect on gender.

He identified the ingredients for knowledge as the information sources or catchments. These catchments include:

> The internal ring, which informs about us and the world from within.

> The external ring, which is also known as the conversational information. It is about speaking the native language, reading, attending class and learning a formal or informal profession.

> Reference information is what is found in libraries, textbooks, CD-ROMs. This type of information points out what we want to become and how we are influenced to achieve this.

> News and cultural information informs us of what is taking place around.

Prof Akundabweni indicated that reference information, especially S&T, runs world systems. He stressed the importance of emphasizing the role of reference information because it shows gender gap in relation to the girl child in all professions including agriculture.

He also explained that culture and religious beliefs and dogmas as tricky issues which people are willing to die for. He added that culture has created stereotyping roles, which are impediments to women's progress. Prof Akundabweni also said that religious beliefs, dogmas and fundamentalism interfere with the level of education, which the girl child receives.

He posed the following questions:

"To what degree is information education and gender harmonized to the extent that the assessment can be used to providing answers to the gaping north south digital divide?"

"Can then one speak of such a thing as the African information education gap with respect to gender?"

Statistics showing the deployment of women in key positions in the Kenyan civil service revealed that

there are far less women in higher echelons of government compared to men. Prof Akundabweni expounded that women's role in creating wealth is insignificant because they are not wealthy. He also indicated that even if women and men became equally competitive, the job market will never be sliced into two equal proportions. He advised that women are needed at a higher level as policy makers, planners and other senior positions to direct agriculture where women's development is key.

Prof Akundabweni argued that the poor distribution of women at senior civil service levels as permanent secretaries, members of parliament, judges, among others indicate that it is not simply technology and innovation, which need to be addressed but also the place of the girl child in the economic, cultural, university and governance structures. He challenged professionals in agriculture not to leave the direction of policies to social scientists but to also assess where the problem lies and contribute to rectifying the situation.

On HIV/AIDS, the presenter said the cultivation of annual crops, unlike perennial crops is in the hands of women and when they are sick and weak and cannot work then the family unit is destabilized. He suggested that opinion leader, constituents, the government, members of parliament should be sensitized about the situation.

4.2.1 Comments, discussions, questions

> I commend the presentation because it brings out deeper issues. Female gender discrimination has to be seriously addressed because it is the underlying problems, which worsen the marginalization of women.

> When I was young I never understood gender issues but now I understand them and I am always quick to explain the importance of girl child education to my father and many other people. I encourage all the participants to do the same whenever the occasion arises.

> The professor has not said much about girl child but instead talked more about the importance of mothers and the roles they play in the home. This tells us the importance of women in general. I would like to ask the following questions:

- Why is it that when a mother dies the children starve?
- Why is it that the father cannot bring food home for the children?

> This invariably shows that women have greater roles to play in development. Women leaders have achieved a lot in Nigeria. A lady was appointed to head NAFDAK in Nigeria and within a short time she was able turn things around by stepping up the rules and regulations, which govern importation of drugs into the country and was able to save lives, which would have been destroyed through consumption of imported fake, low quality and cheap drugs. The finance minister is also a woman and since her appointment, financial affairs have become transparent and all the financial transactions are now being published in the nation's newspapers unlike before. There are more examples of women achievers but the society still does not think that women are capable. More often the girl child looks after the families while the boys do nothing.

> I also commend the professor for addressing gender issues or matters touching on women's development candidly and exhaustively. However, I would like to know if any thing is being done to ensure that more girls take up sciences as the statistics show that

their numbers are really low compared to the boys.

Women have been marginalized, especially in agriculture. When the time for ploughing and planting comes the men are nowhere to be found but come harvest time the men are all round to reap where they did not sow. All the farm proceeds are taken from the women who have worked hard. It is sad that only 20% of women own land while 60% are landless. It is also the same sad story when it comes to animal husbandry where only 0.5% of women own animals and yet they are the ones who tend to these animals. In most communities women are only allowed to keep chickens, which do not fetch as much as cows, goats or sheep.

A group of women came together to learn how to keep chickens but most of the time I am asked why they cannot keep bigger animals to earn more money. Such a project is not possible because of the issues surrounding the ownership of such property. A survey showed that women spend 16-18 hours working each day while men do only 4-6 hours.

> Most of the time men spend their money drinking while women use the little income they make to pay fees and feed the children. Sometimes women do not appreciate the help men give and such an attitude discourages men. Most women shy away from higher professional positions because of fear of not performing to expectation. Women must give such appointments a chance before they conclude that they cannot cope. Women should be more aggressive and vocal in pursuing their goal. They should get rid of the inferiority complex and try their hands on jobs perceived to be for men only.

> All over Africa, one thing we all can identify with from the different places we come from is political instability. From time to time if there is no war going on there is political change or both. Good and effective policies, political will by the government and strong will to enforce good policies are lacking. Most policies do not include the youth and as a result their views are not recognized or included in the policy making process.

> Governments lack adequate resources to share with the youth. The youth should be included in the revenue allocation so that the resources generated from youth activities can be ploughed back into the economy.

> The youth should first help themselves by finding solutions to their problems. As they say "charity begins at home," so also should the youth help to find answers to those things that have hindered their success.

> In looking at the use of the Internet by the youth it is disappointing to note that most youth in Africa do not actually engage in sourcing useful information. The attitude of cutting and pasting information from the net has given the use of the Internet a bad name. The youth who cut corners to achieve their goals are driven by frustration because of their situation contrary to their counter parts in the developed countries. They should take up the responsibility of cleaning out their bad behavior before they ask the society for assistance.

The society does not have confidence in the youth. The youth have a lot of potential but they are prejudged. Generalization of youth by appearance and some other bad behaviors cause all the youth to be criticized unjustly.

Just like Dr Ogbu, the Executive Director of ATPS

said "science is not enough unless the scientists are included in the policy making", so also should the youths to be included in decision making to better address issues affecting them.

4.3 REPORTS FROM THE DISCUSSION GROUPS

A. GROUP ONE: Harnessing Agriculture, Science, Technology and Innovation for Wealth and Empowerment Creation for Youth in Africa

The groups had four questions, and the first one was general to all the three groups. The specific question was:

What are the major challenges preventing youth from achieving their full potential gaining sustainable employment and creating wealth in Africa? List and prioritize.

The answer was categorized under the following headings:

1. Political

> political instability conflict and tribal clashes, which limit availability of resources and investment, destroy their youth and restrict opportunities;
> lack of political commitment resulting in lack of policies for the youth and limited budgetary commitment; and
> lack of youth participation or involvement in governance, which limits their voice in policy formulation and implementation, which could benefit them.

2. Education and infrastructure

> high illiteracy and limited opportunities for educating youth at all levels primary secondary and tertiary;
> high cost of training limited opportunities for industrial attachments;
> outdated curriculum and emphasis on theory without adequately providing practical experience; and
> limited use of ICTs and lack of policies, which could improve access and affordability.

3. Financial

> lack of financial resources to support training and skill development;
> lack/ limited availability of start-up capital to support young entrepreneurs; and
> lack of investments by government and private sector in the youth.

4. Socio-cultural

> Attitude of youth in general needs to change so that they become more self-reliant, more serious and more forward thinking;
> Lack of confidence in youth as society does not value the potential of the youth as they are judged by their age and appearance; and
> Lack of mentors to provide guidance and support.

The challenges, which are preventing Africans from using science, technology and innovation (ST&I) for creating employment was answered as follows:

A. Political, Public and Institutional:

> lack of policies and limited institutional framework to support ST&I, education and knowledge; and
> limited access to education and lack of investment in developing a knowledge society.

B. Infrastructure

> outdated and poorly equipped schools;
> university and research facilities;
> limited, outdated and poorly equipped national industrial plants; and
> Unreliable communication and transport networks including telecommunications, roads, ports and airports

C. Financial and Socio-Economic Problems

Given the gravity of the situation with respect to poverty, health and educations, governments are forced to focus on short-term measures as opposed to investing in ST&I as a strategy for development.

B. GROUP TWO

TOPIC: Youth Employment and Participation in S&T Policy-making Process: Element of an action plan

What is preventing Africa youth from participating in S&T policy making?

Answers

> lack of information exposure and expertise;
> inability to participate in governance because of age restriction;
> culture and tradition;
> bureaucracy and political problems;
> inadequate networking and linkages, which restrict ability to form platforms for lobbying government and other agencies;
> low priority given by African governments and related institution on S&T.

They discussed how the youths could be empowered to participate in S&T and they suggested the following:

> capacity building through training and orientation forums;
> parliamentary representation of the youths by youths; and
> reorientation of the youth from violence to dialogue.

NGOs, government, the media, the United Nations Children's Fund (UNICEF), institutions of higher learning and religious bodies can be enlisted to champion the need for youth employment.

C. GROUP THREE

TOPIC: Youth Leadership and HIV/AIDS Prevention: Elements of an action plan

How is the HIV/AIDS pandemic preventing the youth from realizing their full potential?

Answers

> job stigmatization and discrimination;
> job insecurity and exploitation leading to low productivity;
> loss of hope, opportunity and ambitions and a rise in number of orphans; and
> loss of youth as they must take an adult responsibility.

4.4 A Visit to the Oserian Development Farm

Participants of the youth congress and exposition visited the Oserian Development Company, which grows flowers on the southern shore of Lake Naivasha, Kenya. Maryanne Mwangi, Training Manager and Carol Andrews, Business Development Manager took the participants round and gave a presentation on Oserian, a summary of the presentation is discussed below.

The flowers are grown in two areas; the main farm located on the south-western shore of Lake Naivasha and the Backlands Farm, which is located

further south, close to the northern part of the Olkaria Geo-thermal plant.

The major flower varieties grown and exported from Kenya are roses, carnations, statice, cutfoliage, carthanus, solidaster/solidago, chrysanthmums, arabicum, trlizia, rudbeckia, gypsophilia, lilies, molucella, ernngium and tuberoses.

They learned that Kenya had experienced phenomenal growth in its export of cut flower and the industry is expanding, with roses continuing to dominate the export market with sales increasing by 15% during in three years. There is, however, fierce competition from Colombia, Ecuador, Israel, Zimbabwe, Zambia and Uganda.

They also learnt that the main market for Kenya's cut flowers is the European Union (EU) in particular Germany, the Netherlands, United Kingdom, Sweden, Italy, Switzerland and France. To develop and maintain reputation, Kenyan exporters ensure that they supply high quality flowers to their customers. The EU is the main market, which governs the quality of standards of the Kenyan flower industry. Kenya is currently ranked as the largest supplier of cut flowers to the EU.

DAY FOUR: June 23, 2005

Session One

Chair: Mr Darlington Ndlovu, Research Assistant, IDA/OSERCS, Zimbabwe

FOCUS: Youth Leadership for HIV/AIDS Prevention

5.1 The effects of HIV/AIDS on youth employment and wealth creation: Experiences from Nigeria, by *Ms Belinda Onyinye Ndubuisi*, Development Partnership International, Nigeria

Ms Belinda Ndubisi highlighted the prevalence of HIV/AIDS in Nigeria and showed that infection rates are increasing and the youth between 15 and 35 years old are most affected. The high infection rates, according to Ms Ndubisi, are a result of:

- inadequate knowledge on HIV/AIDS;
- poverty; and
- customs and traditions, including female genital mutilation, circumcision and marriage practices.

Ndubuisi opined that the higher occurrence of HIV/AIDS among females compared to men increased the gender inequality gap. She added that the work force has been reduced by deaths from HIV/AIDS complications, affecting the national economy and development. Other consequences are the rising cost of labour, affecting the cost of goods and services. Orphans are also forced to enter the job market early and chances of pursuing further education to attain higher professional qualifications are minimized.

Ms Ndubisi recommended the following measures for containing the HIV/AIDS pandemic:

- end the silence, which is prevalent in some communities so that people are better informed about the virus;
- encourage people to go for voluntary testing and counseling;
- create a supportive environment for those infected;
- form and strengthen partnerships to fight the HIV/AIDS pandemic; and
- change attitudes towards those affected by HIV/AIDS.

She warned that the escalating rates of infection will deter investors from supporting development programmes that could create wealth and employment in Africa.

5.2 Stigma, attitude, knowledge and behavioural change: The key pillars for arresting the spread of HIV/AIDS in Africa, by Gabriel Kamimo, National Empowerment of People Living with AIDS in Kenya (NEPHAK)

Mr Gabriel Kamimo pointed out that there are approximately 2.6 million people living with AIDS in Kenya, translating to 9% of the total population. He added that there are about 1 million orphans who are affected or infected.

Mr Kamimo defined stigma as a powerful and discrediting social label, which radically changes the way people view themselves or are viewed by society. He indicated that the stigma around HIV/AIDS occurs at the following levels:

- self stigma is where infected persons exclude themselves from society; and
- societal stigma is how the populace looks at those infected with HIV/AIDS.

Mr Kamimo explained that stigma has an enormous impact on the lives of people living with the HIV/AIDS virus leading to early deaths. Stigma undermines the fight against HIV/AIDS because it is difficult to assist infected persons if they are not ready to reveal their status. He also said that HIV/AIDS is often associated with immorality and promiscuity and this is a fallacy and generalization, which could be attributed to:

- lack of sufficient knowledge;
- high prevalence of sexually transmitted infections affecting 70% of the Kenyan population;
- cultural beliefs and practices that allow sharing of wives, for example, among the Samburu and Maasai communities; and
- wife inheritance.

Mr Kamimo indicated that young people are at a higher risk of infection because:

- They do not see themselves as likely to be infected by the virus hence the continuing adventurous life of sexual defiant behaviour.
- The youth lack accurate information on preventive measures against HIV/AIDS and preaching abstinence is not realistic to them.
- Secrecy and privacy on human sexuality deter discussion of such issues between the youth and their parents.

He advised that secrecy and privacy dominating the subject of sex must be unveiled to allow free exchange of information. Mr Kamimo suggested that the youth can be used to talk to their peers about HIV/AIDS. Attitudes, skills and practices on combating the HIV/AIDS pandemic should be improved at all levels to encourage role modeling for prevention.

5.3 Abstinence and behaviour change for the youth: What works?, by Mr Juma Warria, Research Coordinator, I Choose Life - Africa

Mr Charles Juma Warria, Research Coordinator of I Choose Life-Africa, a non governmental organization involved in active HIV/AIDS behavior change in Kenyan universities and the surrounding communities told the meeting that young people under 25 years old, who account for nearly half of the global population, hold the greatest hope for changing the course of the HIV/AIDS pandemic despite the fact they are the most vulnerable to HIV/AIDS.

Mr Warria delivered an insightful presentation aptly titled **Abstinence and Behavior Change for the Youth. What Works?**, which sought to address the institutional responses to the plight of young people around the world.

He explained that susceptibility to HIV/AIDS is higher among the youth due:

- risky sexual gambles for survival and sustenance;
- lack of HIV/AIDS information, education and services because of a conservative society, which compound a young person's risk in addition to misinformation from equally ignorant peers;
- peer pressure; and
- adolescent experimentation and its subsequent risks__ adolescents do not fully comprehend the extent of their exposure to risk..

Mr Warria divulged that the present youth population aged between 15 to 24 years have never known a world without HIV/AIDS and sadly have been found to initiate sexual activity in their teen years, some before their fifteenth birthday.

Citing statistics from a UNAIDS, 2004 report, Mr Warria said that premarital sexual activity amongst adolescents is often catalyzed by:

- increasing urbanization;
- poverty;
- exposure to conflicting ideas about sexual values and behavior; and
- breakdown of traditional sexuality and reproduction information channels.

He acknowledged that the current generation of youth numbering about 1.7 billion worldwide is the largest population ever to make transition into adulthood. Mr Warria stressed that young people who constitute nearly 30% of the population in the developing world are crucial to sustainable economic, social and political progress and stability of their societies and communities. He also stressed that the values, attitudes and skills acquired by the youth and their successive choices will fundamentally influence the course of current events and shape the future world.

Mr Warria disclosed that over 60 million people, half of them aged between 15 and 24 have been infected with HIV in the past 20 years. Moreover, 12 million young people are presently living with HIV/AIDS, and young women are more likely to be infected than young men.

He urged the society in general to raise awareness among the youth about HIV/AIDS at an early stage

preferably before they become sexually active. He challenged education and communication programmes to go a step beyond merely offering information, to encouraging avoidance skills such as abstinence, delaying sexual experience to an appropriate age, and negotiation with sex partners.

Mr Warria said that Kenya currently has the fourth largest population of people living with HIV/AIDS in the world. Three quarters of the 250,000 people living with AIDS in Kenya are aged between 15 and 49 years old. Of particular interest to I Choose Life Africa, is the 12.45% to 18.67% of the infected group who are college attending females, while 4.80-7.21% are male college attendees, a phenomenon that has had a striking impact on higher education in Kenya and other developing countries. Tragically, many college students die a few years after graduation. Mr. Warria strongly challenged institutions of higher education to play an active role in developing effective mechanisms to deal with HIV/AIDS impact within the institutions and their neighboring communities.

He informed the participants that I Choose Life Africa is actively involved in behavior change communication and interventions in addition to training peer educators in Kenyan universities and the surrounding communities. Mr Warria explained that I Choose Life-Africa recognizes that education on its own is insufficient to induce behavior change since the sexual behavior of the youth is widely diverse and embedded in different individuals. He further explained that I Choose Life- Africa bases its programme strategy on individual psychosocial and cognitive approaches that seek to equip individual youth with practical skills to minimize the risk of HIV infection.

Since the cognitive aspect forms an integral component of behavior change communication and in this case HIV/AIDS prevention, the I Choose Life Program has strived to create a conducive environment within universities by nurturing groups of caring communities that are capable of making responsible and informed choices with regard to life and HIV/AIDS.

5.3.1. Questions, discussions, comments

Comments

> People should understand messages advocating for behaviour change. They should also be aware that there is treatment, which will minimize chances of infection up to 72 hours after exposure to the HIV/AIDS virus.

> People should be encouraged to visit the Voluntary Counseling and Testing (VCT) centres to know their status and prevent infection and re-infection

> The main mode of transmission is sexual intercourse; concentration of the virus in saliva is low so kissing is not perceived as a major threat.

5.4 Discussion: Living with HIV/AIDS in Kenya (Testimonies)

5.4.1 Ms Elizabeth Atieno – Maxfacta (see Annex 7)

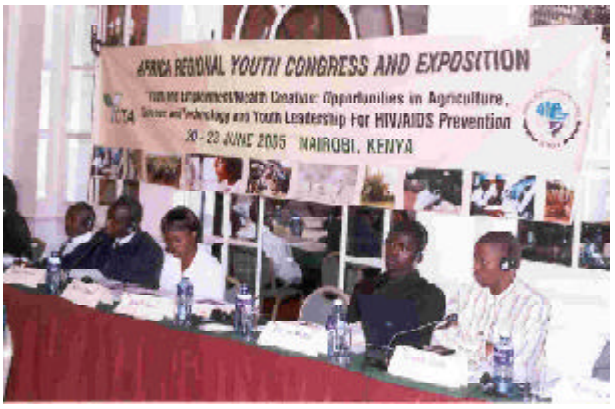
5.4.2 Ms Caroline Sande – NEPHAK (see Annex 8)

Continued on pg 46...

Mr Abubakar Hassan,Youth Technical Asistant, Agrovet, Sudan, Ms Sally Chikute, University of Zambia, Mr Victor Emeka, Student Leader, University of Nigeria and Mr Michael Waigwa, Chairman, Nairobi University Agriculture Students Association, NUASA, during one of the sessions

Participants at a working group session

"Congratulations", says Prof. Miriam Were, Chairperson, NACC, as she presents a certificate of participation to Mr Victor Ngwoke Emeka, Student, University of Nigeria, Nsukka. Dr Ogbu, ATPS looks on



A cross–section of participants listen to the presentations through simultaneous interpretation

Essay winners pose for a picture with Dr Ogbu, Judith Francis and the essay judges. From Left: Mr William Avoxe, KNUST, Ghana, Dr Ogbu, Phillip Mutuma, KARI-Embu Station Kenya, Christine Ndunge (UoN, Kenya), Winnie Alum, NARO, Uganda, Otula Owuor , Elizabeth Lawson, George Kanthiti, Chitedze Agricultural research Station, Malawi, and Ms Judith Ann Francis

Attentive participants during one of the proceedings/ presentations

“What a marvel!!”, Participants admire the bicycle mounted device introduced by Centurion Systems to help provide digital communication for rural folk

Mrs Tientcheu Djike Blandine, Assistant Researcher, Cameroon, giving vote of thanks during the closing ceremony

“The power to read and write can be used to create wealth”, seems to be the message as participants peruse through workshop documents

Elizabeth Obanda, Programme Manager, Africa NOW, Kenya and Titi Akinsanmi, Programme Manager, Schoolnet Africa, South Africa, follow the discussions

‘This essay reads well”, judges Otula Owuor and Elizabeth Lawson seem to be telling Maurice Bolo, right

Participants of the Africa regional youth congress and expo on employment and wealth creation – group photo

Continued from pg 43...

5.5 Closing ceremony

Speeches:

5.5.1 Prof Miriam Were, Chair, National AIDS Council of Kenya

Prof Were encouraged the youth to strive to stay alive because so many young people are trying to do things that are killing them, including engaging in sex, the most prevalent means of transmitting HIV/AIDS in Africa.

Quoting Isaac Newton, Prof Were said, "I have seen further because I was standing on the shoulders of the giants", she advised the youth to borrow and learn from older people by understanding content, issues and opinions.

She narrated her experiences during the colonial era in Kenya, adding that her generation brought political liberation from colonialism to independence and challenged the youth to liberate Africa from economic dependence. Prof Were reminded the youth that the current generation of young people is most informed, educated and exposed to the world of knowledge and technology and they must pass the legacy on. She urged them to use the knowledge and technology to create wealth.

5.5.2 Ms Judith Ann Francis, CTA

Ms Judith Francis borrowed Koffi Anan's statement indicating that national, regional and international organizations have been focusing on issues affecting the youth for the last twenty or more years and seven key issues impacting the youth are identified as:

1. Numbers issue: A large proportion of unemployed, unskilled, untrained youth are living under inadequate/poor economic situation and this is a challenge, which needs to be urgently addressed.

2. Education Issue: In advocating capacity building and empowerment, the intervention, the target group and the level at which to target programmes to have significant impact must be carefully identified.

3. Economic value issue: The youth as a community have limited access to resources and seemingly financial power, leading to their marginalization. Identification of who gets access to resources and micro financing to support entrepreneurship must be clearly stated in relevant policy and programme instruments.

4. Policy issue: Several organizations have targeted the youth and several countries have initiated ministries, which address youth issues. However, lack of coherency and coordination of youth policies and lack of information on youth to inform policy development complicate the issue. Youths should be adequately represented in policy and governance issues and must be empowered to participate in the process.

5. Migration issue: Rural urban drift and brain drain are draining communities of talented youth. If the capacity of the youth is built and they are empowered then providing the incentive for the youth to

stay depends on policies and governance in the various countries.

6. Perception and reality issue: In reality the youth lack confidence in the system. However, the perception exists that they have poor attitudes and therefore cannot be agents of change. In examining the strategies for empowering youth and building capacity and confidence and developing positive attitudes, an enabling environment must be addressed.

7. Knowledge Issue: There is need to review schools and universities, their programmes and facilities where the youth can re-invent themselves. Knowledge is power and even when information is available, some youths may not be able to grasp all the opportunity for empowerment and capacity building. A CNN documentary compared Malaysia and Ghana's economic development since the two countries gained independence at the same time. Malaysia had invested resources in building knowledge skills in research and innovation with emphasis on education and upgrading infrastructure to advance their development. Their success to date was associated with visionary leadership. The right environment is created in Africa to overcome some of the obstacles facing youth then the continent could make giant strides.

5.5.3 Dr Osita Ogbu

Dr Ogbu reminded the participants that HIV/AIDS has led to crises in Africa in agriculture, employment and the future of the continent of the continent is at stake. He urged the youth to be strong, share ideas and be agents of change. He lamented the fact that HIV/AIDS has not been treated like a public health issue but as a private and secondary issue.

"Why would you test the husband and not tell the wife, why did we allow the girl at Moi University to infect 165 persons?; Should we strike a balance when we identify the effect on the society?, he asked. He challenged the participants to use such incidents as a social issue, which demand for responses, which can distinguish between human rights protection and the concerns for the larger public.

Dr Ogbu warned that HIV/AIDS affects everyone directly hence the need for the youth to take back the ideas from the congress to their constituencies. "This is a seed and use the various channel for the seed to germinate so that others can partake in this knowledge," he stressed. He added that the youth are aware of HIV/AIDS but the disease continues to spread hence the need to engage the youth in the various forums as a way of controlling the pandemic.

5.5.4 Vote of Thanks

Dr Osita Ogbu thanked CTA with special mention of Ms Judith Francis of CTA, Mr Maurice Bolo, ATPS and the ATPS staff for a successful meeting. He also thanked the youth leaders for attending the meeting and reiterated that they should return home and share the lessons from the conference with others.

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Annex 2: CTA/ ATPS AFRICA REGIONAL YOUTH CONGRESS PROGRAMME

Day 1 – June 20, 2005

8:00 – 9:00	Registration
9:00 – 10:30	**Opening Ceremony**
Chairman –	**Mr. Alex Gacuhi, National Coordinator, ATPS-Kenya Chapter**
9:00 – 9:10	Welcome Remarks – Mr. Maurice Bolo, Research Officer, African Technology Policy Studies Network (ATPS), Kenya
9:10 – 9:30	Remarks – Ms. Judith Ann Francis, Senior Programme Coordinator, Science and Technology Strategies, Technical Centre for Agricultural and Rural Cooperation ACP-EC (CTA), The Netherlands
9:30 - 9:50	Remarks - Dr. Osita Ogbu, Executive Director, African Technology Policy Studies Network (ATPS), Kenya
9:50 – 10:00	Closing remarks – Mr. Alex Gacuhi, National Coordinator, ATPS- Kenya
10:00 – 10:30	**Coffee Break**
10:30 – 12:30	**Focus Essay Competition**
10:30 -11:30	Overview of Competition and Presentation of Awards – Head / Chief Judge – Mr. Otula Owuor, Communications Consultant, African Biotechnology Stakeholders Forum (ABSF), Kenya
11:30 – 12:15	**Presentation of Top Three Essays** Mr. Phillip Mutuma Munyua, Research Assistant, Kenya Agricultural Research Organization (KARI), Kenya Ms. Muthoka Christine Ndunge, Student, Department of Range Management, University of Nairobi, Kenya Ms. Winnie Alum, Research Assistant, National Agricultural Research Organization (NARO), Uganda
12:15 – 12-30	Discussion
12:30 -14:00	**Lunch**
14:00 - 17:30	**Focus – Agriculture, Science Technology and Innovation for Employment and Wealth Creation**
Chairman –	**Mr. Ndolo Asasa, Programme Officer, Youth Agenda, Kenya**
14:00 – 14:30	**Keynote Presentation**: The role of Science, Technology and Innovation in Wealth and Employment Creation. The prospects and challenges for youth in Africa - Dr. Kevit Desai, Managing Director, Centurion Systems Ltd, Nairobi Kenya
14:30 – 14:45	Discussion

14:45 – 15:15		**Keynote Presentation:** Information and Communication Technologies (ICTs): Opening new frontiers for youth in Africa – Ms. Titi Akinsami, Program Manager, Global Teenager Project, South Africa
15:15 – 15:30		Discussion
15:30 – 16:00		Utilization of ICTs in the Small and Medium Scale Enterprises (SMEs) in Africa: A case study of Internet use in the Kariobangi Light Industries in Kenya – Mr. Muriuki Mureithi, Chief Executive Officer, Summit Strategies Ltd, Nairobi, Kenya
16:00 – 16:15		Discussion
16:15 – 16:30		**Coffee Break**
		Focus – Agriculture, Science Technology and Innovation for Employment and Wealth Creation / Modern & Indigenous Technologies
Chairman	**–**	**Mrs. B. L. Tientcheu Djike, Assistant Researcher, Nkolbission Regional Research Center, IRAD, Cameroon**
16:30 – 17:00		Agro-processing Technologies and Value Addition to Agricultural Products: The case of snail processing and employment/wealth creation in Ghana - Mr. Francis Kweku Amagloh, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana
17:00 - 17:30		Indigenous Technologies and Wealth Creation: A case study – Mr. Cindano Charles Gakuru, Legal Officer, Mt. Kenya Organic Farmers Association, Kenya
17:30 – 18:00		Discussion
19:00 – 21:00		**Cocktail Reception**

Day 2 – June 21, 2005

8:30 – 13:00		**Focus – Agricultural Science, Technology & Innovation – Role of ICTS**
Chairman	**–**	**Mr. Zelalem Wudeneh, Senior Information Expert, Ethiopia S&T Commission, Ethiopia**
8: 30 – 9:00		Agricultural Biotechnology and Wealth Creation in Africa: Prospects for Youth: the case of Tree Biotechnology Project in Kenya – Mr. Maurice Bolo, Research Officer, ATPS, Kenya
9:00 – 9:15		Discussion
9:15 – 9:45		Role of Geographic Information Systems (GIS) in Enhancing Agricultural Productivity and Wealth Creation in Africa: Practical applications in Kenya— Mr. Sospeter Ohanya, Senior Survey Engineer, Tana River Development Authority (TARDA), Kenya
9:45 – 10:00		Discussion
10:00 – 10:30		**Coffee Break**

10:30 – 12:30		**Focus – Creating the Environment for Science, Technology & Innovation for Employment and Wealth Creation**
Chairperson	**–**	**Ms. Belinda Onyinye Ndubuisi, Director of Programs, Development Partnership International, Nigeria**
10:30 – 11:00		ACP Biotechnology Policy Brief / ACP Region must Harness Biotechnology for a Better Future - Ms. Judith Ann Francis, Senior Programme Coordinator, CTA, The Netherlands
11:00 – 11:15		Discussion
11:15 – 11:45		Accessing Start-up Capital for Innovative Youth Projects in Uganda: The Case of L'ogel Project – Mr. Herbert Lwanga, Principal Investigator, L'ogel Project, Kampala, Uganda.
12:15 – 12:30		Discussion
12:30 – 14:00		**Lunch**
14:00 – 18:30		**Focus – Youth Empowerment, Leadership and Engagement in Policy Making Processes**
Chairman	**–**	**Mr. Ndong Ndiogou, Centre Regional Pour L'Eau Potable et l'Assainis, Senegal**
14:00 – 14:30		Science and Technology alone are NOT enough: Politics, policies and linkages for S&T-led development in Africa: What role for the youth? Dr. Osita Ogbu, Executive Director, ATPS, Nairobi Kenya
14:30 – 14:45		Discussion
14:45 – 15:15		Legal and Policy Support for Science and Technology in Africa: An audit of selected East African countries – Mr. Ndolo Asasa, Program Officer, Youth Agenda, Kenya
15:15 – 15:30		Discussion
15:30 – 16:00		**Coffee Break**
16:00 – 18:00		Working Group Sessions Group 1: Harnessing ASTI for Wealth and Employment Creation: Options and Elements of an Action Plan Group 2: Youth Empowerment and Participation in S&T Policy making processes: Elements of an Action Plan Group 3: Youth Leadership and HIV/AIDS Prevention: Elements of an Action Plan
18:00 – 18:30		Working Group Reports Group 1: Harnessing ASTI for Wealth and Employment Creation: Options and Elements of an Action Plan Group 2: Youth Empowerment and participation in Policy making processes: Elements of an Action Plan Group 3: Youth Leadership and HIV/Prevention: Elements of an Action Plan

Day 3 – June 22, 2005

8:30 – 12:30		**Focus – Agricultural Science, Technology & Innovation – The Way Forward for Africa's Youth**
Chairman	**–**	**Ms Lydia Atieno Olaka, MSc Student, University of Nairobi, Kenya**
8:30 – 9:00		Opportunities for Innovative Grassroots Partnerships for Employment and Wealth Creation in Kenya – Ms. Elizabeth Obanda, Project Manager, Africa NOW, Kisumu, Kenya
9:00 – 9:30		Discussion
9:30 – 10:00		Bridging the Gender GAP in Agriculture Science, Technology and Innovation Education in Africa – Employment and Wealth Creation - Prof. Levi Shadeya-M Akundabweni, Ag. Dean, Faculty of Agriculture, University of Nairobi, Kenya
10:00-10:30		Discussion
10:30 – 11:00		**Coffee Break**
11:00 – 12:00		**Focus – Youth Employment and Wealth Creation in Africa / Agriculture, Science and Technology: The way forward**
Chairman	**–**	**Ms. Judith Ann Francis, CTA, The Netherlands**
		Working group reports and elements of the communiqué
12:00 – 13:30		**Lunch/ Travel to Oserian Flowers Ltd**
13:30 – 17:30		**Field Trip**: Oserian Flowers Ltd, Naivasha, Kenya **Coordinators:** Faith Wanjiru, Youth Agency for the Development of Science, Technology and Innovation (YADSTI) and Ms. Lydia Atieno Olaka, University of Nairobi

Day 4 – June 23, 2005

Focus – Youth Leadership for HIV/AIDS Prevention

Chairman	**–**	**Mr. Darlington Ndlovu, Research Assistant, IDA/OSERCS, Zimbabwe**
8:30 – 9:00		The Effects of HIV/AIDS on Youth Employment and Wealth Creation: Experiences from Nigeria – Ms. Belinda Onyinge Ndubuisi – Development Partnership International, Nigeria
9:00 – 9:15		Discussion
9:15 – 9:45		**Keynote Presentation:** Abstinence and Behaviour Change for the Youth: What Works? Mr Juma Warria, Research Coordinator, I Choose Life-Africa, Kenya
9:45 – 10:00		Discussion

10:00 – 10:30		**Coffee Break**
Chairman	**-**	**Ms. Joyce Amoako, Scientific Officer, Water Research Institute, Ghana**
10:30 – 11:00		Stigma, Attitude, Knowledge and Behavioural Change: The key pillars for arresting the spread of HIV/AIDS in Africa –Gabriel Kamimo, National Empowerment of People Living with AIDS in Kenya (NEPHAK).
11:15 – 11:45		Using ICTs to empower Africa Youth in the fight against HIV/AIDS - Mr. Eric Wainaina Mungai, Oneworld International Ltd, Kenya
11:45 – 12:00		Discussion
12:00 – 12:30		**Panel Discussion**: **Living with HIV/AIDS in Kenya** Mr. Gabriel Kamimo - NEPHAK Ms. Caroline Sande - NEPHAK Ms. Elizabeth Atieno -Maxfacta
12:30 – 14:00		**Lunch**
14:00 - 16:00		**Panel discussion : Youth Leaders as Advocates for Change: Empowerment and Capacity Needs**.
Moderator	**-**	**Prof. Rodger Kizungu, Directeur de l'experimentation Agricole (INERA), Democratic Republic of Congo (DRC)** **Panelists:** Dr. Osita Ogbu, ATPS Ms. Judith Ann Francis, CTA Juma Warria – I Choose Life-Africa, Kenya Prof. Mirriam Were, NACC Abdallah Adil Ahmed, Ministry of S&T - Sudan Mrs. B. L. Tientcheu Djike, IRAD- Cameroon
16:00 - 16:30		**Closing Ceremony**
16:30 – 17:00		**Tea/Coffee break**

Annex 3: ESSAY COMPETITION ANNOUNCEMENT

TOPIC: Tapping the Potential of Science, Technology and Innovation in Agri-food Chains in Africa – Creating Employment & Wealth for Youths in Africa

CTA and ATPS are happy to announce an essay competition based on the above topic. The essay should explore the following areas:

- identify the critical obstacles facing the youth in the quest for employment and wealth creation in Africa
- explore how agriculture, science, technology and innovation can be employed to overcome these obstacles
- give practical proposals/suggestions on how to tap the potential of agriculture, science, technology and innovation in agri-food chains in Africa.

NB: this section should include concrete recommendations and steps to be taken to address the issues of unemployment

Guidelines

- The essay should be approximately 1,500 words in length, written in English and submitted in MS-Word (Font: Times New Roman, 12 points).
- The essay together with full curriculum vitae (CV) must be submitted as MS-Word attachments.
- Personal experiences/reflections: the use of personal experiences in creating employment opportunities using science, technology and innovation in agriculture is preferred giving details of the science/technology employed, description of the problem solved, and the results/impact (number of people employed or situations improved).
- The essays could also focus on the activities of an organization that is engaged in creating wealth and employment opportunities by harnessing the powers of Science, Technology and Innovation (ST&I) in the agri-food chains.

Eligibility

- Youth in sub-Saharan Africa (SSA) aged between 18-30 years.

Judging Criteria

Essays will be evaluated on the basis of demonstrated understanding on the issues, quality of argument or analysis and writing style.

Prizes

- Sponsorship to the CTA/ATPS youth congress on *"Youth and Employment/Wealth Creation: Opportunities in Agriculture, Science and Technology"* in June 2005 in Nairobi, Kenya. (Travel, accommodation, and sustenance paid)
- Cash prize and certificates for the top 5 entrants
- Essays to be published on the CTA/ATPS websites and other publications

Deadline

All essays and application materials must be sent through the following e-mail address youth@atpsnet.org no later than 10 May, 2005.

Annex 4: ESSAY: Tapping the Potential of Science, Technology and Innovation in Agri-food Chains in Africa: Creating Employment and Wealth for Youths in Africa

Winnie Alum

National Agricultural Research Organization

Uganda

Introduction

Over the last twenty years, the speed of change in the global economy has accelerated dramatically (Elshof P, 1998*).* There is no area in Africa's development agenda that is not affecting the youth. One of the most dynamic determinants of the path of economic growth and development is the age structure of the population and the quality of the labour force. Children and youth constitute more than 50 percent of the population of Africa, and this proportion is increasing very fast, especially when we consider the early mortality of the adult population due to the HIV/AIDS scourge. This means that more attention must be given to the youth as they are the only hope for Africa's future.

The high unemployment affecting young people is a pressing economic and social issue in both developed and developing countries alike. The ILO estimates that the 74 million young women and men who are unemployed throughout the world represent roughly two-fifths of all unemployed persons globally. In general, young people are two to three times more likely than adults to be unemployed. In many economies, the youth are particularly disadvantaged. Yet, the severity of the youth unemployment situation is understated.

An estimated 59 million young people between 15 and 17 years of age are currently engaged in hazardous forms of work and in many economies, the youth are particularly disadvantaged and of the young people who are employed, many are required to work long hours for low pay, often in the informal economy (Sachs, *et al.* - The Geography of Poverty and Wealth) questioned why some countries are stupendously rich and others horrendously poor? Social theorists have been captivated by this question since the late 18th century. As the world is trying to answer this question, the chronic poverty in sub Saharan Africa caused by factors such as unemployment, wars, ignorance and attitudinal behaviour worsens day by day, making the youth in Africa so vulnerable. This vulnerability has resulted in hopelessness for many young people in Africa as many of them give up on the struggle for improving livelihoods and start indulging in criminal activities such as theft, murder, pornography, rebel activities, misuse of drugs and violence. However, there is still hope for Africa's youth as their situation can still be rescued by promoting projects that are geared towards improving their living conditions through promotion of science, technology and innovations. These can be initiated and sustained by the youth themselves. Science and technologies that are simple to adopt to promote food security and yet not compromise income generating activities that bring cash into the pockets of youths should be encouraged.

Critical obstacles facing the African youths in their struggle for employment and wealth creation

The youth in Africa are tirelessly struggling to come out of the chronic poverty in which they have lived since they came into existence. However, despite their struggle, their efforts are constantly being frustrated by many stumbling blocks. The fact that most people in Africa are still engaged in direct consumption or subsistence farming - local production for local consumption "you eat what you grow" will still make the young people in sub-Saharan Africa poor and unemployed. Most people seem to believe in the "hand to mouth theory" where they produce only what their families can survive on and nothing is left for sale to generate some income which could be invested in other businesses to create employment for youths in the family.

Low level of education

Due to the persistent poverty in many households in Africa, children never get to achieve good education which gives them the competitive edge to secure employment or become entrepreneurs when they grow up. This low level of education is also attributed to inability by most parents to pay tuition fees for their children so that they can reach a higher level where the qualification speaks for itself and opens doors. With the low level of education and no hope for survival, youths have been exploited as they take up any jobs that come their way. There have also been cases where they are physically and sexually abused and they do not say a word in protest because they must protect their jobs.

It is unfortunate that the sub-Saharan Africa which is inhabited by one of the world's poorest lot has semi-arid land. This has led to low productivity of agriculture which most African countries depends on for both food and job security. This implies that, the little which is produced is also of poor quality and even if the produce surpluses were there it would never attract high prices to increase earnings which can support reinvestment in another enterprise for further income generation.

Ignorance of modern agricultural practices is an obstacle facing the youth in their quest for employment. Most youths are doing things they found their parents doing and hence the same results their parents always got are exactly what is being got. Agricultural productivity can never improve to the extent that it can become a source of employment for youth and other jobless people as long as the hand hoe is the only tool being used. The out put from this kind of practice is too low such that yields can be increased for produce to be offered for sale or even stored to meet future food needs. Families starve due to lack of food making it very difficult for any young person from such a starving family to have enough confidence to walk out of the house to look for a decent job or start an enterprise. Hence they will always remain jobless and poor and incapacitated to create wealth.

Low attitude towards certain jobs

It has been proven that youths despise some jobs and call them "Local" most of these despised jobs are agriculturally and manually related. The youth prefer the so called white collar jobs where one sits in an office and uses the machines to ease the work load other than going out to the field for research work or practicing agriculture. The youth have also labeled some jobs to be for rural and un-educated people and when offered such jobs such as experimenting with farmers, most of them would prefer to remain unemployed than use his or her degree in the village or mix with the "uneducated farmers" through farmer participatory research approach. This kind of arrange-

ment has left many young people in Africa jobless and roaming the streets of many cities in search of "good jobs" which they cannot get due to the stiff competition for such jobs.

Lack of timely and reliable information about the available jobs is a critical obstacle to youth employment and wealth creation in Africa. The poor young people who are fresh from universities and colleges have no access to information about the existing jobs because they are too poor to access job related information from the media in which these jobs are advertised. Related to this, the vulnerability caused by poverty has made many youth desperate that most of them wake up in the morning and walk long distances in search of employment. This has caused their health conditions to deteriorate, due to stress, starvation on the streets as they search for jobs, further contributing to low self esteem and frustration.

After the long struggle of job searching and getting one, the youth in Africa have no job security. Since these are young people still in the "morning" of their lives and careers they lack experience and yet they are not given the time to gain experience on job. When the employer discovers that the young person is just learning on the job, he sacks him /her. This prolongs the trend of unemployment for the youth in Africa since they are so poor and defenseless without money. They simply give up in frustration and are not willing to do anything towards wealth creation due to lack of capital to invest in the business, which they may have thought of engaging in.

It is also common that the youth are under paid. This is because in their search for the job they appear to be desperate and in the end, the employer may offer the job with a lower salary and yet the work is very tedious and / or they must work under hazardous conditions with greater risks of accidents, chronic sicknesses, and stress or even at worse death.

Corruption has also proved to be one of the serious obstacles to youth employment and wealth creation. The young people who have not yet saved any income to invest in developmental activities are often faced with corruption at every level of their lives. It is common to find that if a young person applies to tender to supply goods and services to an organization at the same time as a more established person or firm, the competitor may bribe the organization or due to their track record, win the tender while the poor youth who has nothing to offer, nor the experience, loses the opportunity. This has affected the efforts of the young people as they are not motivated to invest because of the seemingly rampant corruption in Africa.

In countries where there are wars going on like in the northern part of Uganda, getting a job is a big challenge to many youth. The rebel attacks scare away the people and they all camp together where there is no land to farm, no money to buy whatever is being sold and no hope of getting any enterprise to invest in as there is no capital for start up. The number of people searching for employment therefore becomes too many as the population of the unemployed increases and is concentrated in one refugee camp making the jobs even scarcer.

Bulindi Agricultural Research and Development Centre, (our way of creating employment for the rural communities and enhancing food security)

Agriculture employs more than 80% of the sub-Saharan African population. In Uganda, the National Agricultural Research Organization whose major goal is to contribute to sustainable improvement of agriculture by conducting relevant research to eradicate poverty and improve the livelihoods of the rural poor has employed many tools and approaches including agriculture, technologies, science and innovation to create employment for the rural

communities. Bulindi Agricultural Research and Development Centre is one of the twelve research centres under National Agricultural Research Organization making this strategy for improving peoples' livelihoods effective. The research centre achieves this goal through many ways and steps which can also be adopted to create employment and wealth for youths in Africa because this is being applied to both youth groups and any other organized community groups and this has been successful to date. Below are the steps we practically use to create employment and enhance food security for the rural communities with which the research centre work.

Group identification and selection

It is believed that for any effort, aimed at achieving community development to be effective, it has to be channeled through an organized group of people. This is because innovations can easily be promoted in an already focused group of people who share some common objectives. With this belief ingrained in the institution's policy, a search for competent groups in the communities is usually launched to identify groups which have strong links with the rest of the community which later will be used to scale out the findings of whatever activities the research centre may want to do with the groups. Before the scientists from the research centre can move out to identify the groups to work with, a needs assessment survey is carried to find out whether what the centre wants to take out to the community is really what the community members want. In many societies in which this needs assessment survey was conducted, findings revealed that, there was high unemployment due to illiteracy and all the problems associated with job seeking mentioned above. Another common finding is that there is inadequate food in most households, lack of income due to lack of capital to invest in income generating activities and general ignorance about what type of enterprise the community should invest in to reduce unemployment and food insecurity in the community.

When the problem has been identified and the groups through which the development or the solution is to be channeled are selected, the groups are then taken through a process of community participatory diagnosis and visioning. Community participatory diagnosis is an interactive process of building rapport with the community and confidence by holding dialogue with them, discussing various facts about the area and their livelihood. It is aimed at creating a better understanding of community livelihood assets, opportunities and strategies that form basis where future activity plans and interventions can be developed to improve the community's livelihood. The process involves a visioning exercise that challenges farmers to reflect much longer into the future than in day to day problem solving. Various tools are used to collect basic information about the area which is meant to lead into enterprise development process. The output of this activity is to generate a range of baseline data about the community so that hope is restored into peoples' hearts. This hope is restored when people discover through this activity the major assets in their communities that can be used to create employment for the community members and also through effective utilization of the communities' resources, food insecurity which is so common in the communities is avoided. This exercise also brings out the constraints in the community which may hinder food production and development of income generating enterprises.

The main purpose of identifying constraints to development in the community is to make members aware of them and together brain storm on the possible solutions or coping mechanisms. The process of community diagnosis moves hand in hand with community visioning. Visioning makes the community look in the future and imagine what they would love to have in the near future and in the long run to call whatever activity they are involved in a

success. Community members can be facilitated to look into the future by giving a time frame and imagine all the good things they would love to have say in 3-6 years' time if they get involved in an activity which will utilize the resources that the community has developed through their own initiative. This sounds like a dream that can easily become true and it excites people, putting them in the mood to work so that they can realize their dreams. It is believed that before one does some thing, it must first be thought about, visualized and planned before one is prompted to do it.

The process of community participatory diagnosis and visioning leads to identification of activities to be done so that the dreams of having cows, permanent buildings and all the good things that any normal human being can dream about can come true. Since inadequate food poses a very serious threat to the livelihood of many households, the community is guided to select three major food crops which are important to them in fighting famine. The community is also guided to select crops, livestock and any other activities that to them can be promoted for income generation. At a later stage, a few selected group members are facilitated to undertake market research to confirm the income enterprises selected.

Experimental design

To experiment on the selected food crops could have been selected, the experimentation committee is then selected so that the different varieties of crops are tried on different soil types using the same treatments. The committee is selected to do this experiment because of the scarcity of the planting materials which in most cases are not enough to be given to all the group members and because of the uncertainty of how the crops would perform. As a subsidy, the research centre provides the groups with improved seeds and other planting materials of the crops selected for food security. The experimentation of these crops is done for three seasons and together with the rest of the group members the experimenting committee monitors and evaluates the varieties against their own varieties. After evaluation, the community then selects the best alternative that suits their ecological system for multiplication and dissemination.

These new technologies are usually high yielding and have short maturity period. The youth would be attracted to these new technologies as they take a few weeks to mature and yet the harvest is high. The low yielding and late maturing varieties that seem to discourage the youth from practicing agriculture as an alternative employment venture is then replaced. More youth who are unemployed willingly join during this farmer participatory research. They are willing to share both their academic and indigenous knowledge in agricultural practices as they mix freely with the research scientists and eventually take up agriculture as an employment and income generating venture. This does not only solve the problem of unemployment but also boosts food security in many households which are currently starving due to lack of food caused by poor and low yielding crop varieties that most households are busy struggling to multiply to no avail.

Incorporating indigenous technical knowledge into agricultural production

It was noted with concern that most youths and the entire community who could have successfully practiced and promoted agriculture through use of traditional agricultural practices shy away because they seem to think that the practice is local. The research centre has popularized the use of indigenous technical knowledge in agricultural production. The local botanicals like ash, red pepper, tobacco dust and urine are some of the traditional pesti-

cides used to prevent damage of produce and crops. It has been proven that red pepper and ant hill soils can preserve produce for at least eight months which is good enough for an individual to have had time to identify markets, crops were for sale and for food, the new harvests would have been out of the fields.

Participatory market research is one of the ways that the centre employs to ensure that the community selects the best income generating enterprise as a confirmation of the crops and livestock selected during the participatory community diagnosis. Just like in the experimentation of food crops committee, where members are selected to experiment, in the same way, a market committee who can conduct a guided market visit to explore market opportunities, information and then give a feedback to other members is selected. This market visit enables them to make informed choices on the enterprise that will be further developed for the identified markets. It also helps the community to produce what is being demanded in the market and not try to sell what they have produced. The selected market committee is given a task to explore other market opportunities found in the visited market outlets outside the initial enterprise list. The committee then brings the feed back to the rest of the group members who did not go for the market visit the information about the market opportunities found. This leads to the selection of an enterprise for income generation based on the information got from the market about different commodities.

Cost benefit analysis

This is done to help the poor communities and job seekers who are already financially constrained start with an enterprise that is relatively cheaper. At this stage of the enterprise development, the community is advised to use locally available materials to reduce the cost of production. This however does not mean that, the freely available materials are not being considered as important. It is advised that the community costs every thing so as to determine how much profit the enterprise is generating assuming that all the materials were bought.

Capacity building of the groups

This is done through training in group strengthening, soil fertility management, marketing skills, record keeping and cross cutting issues such as environment and HIV/AIDS. The purpose for these trainings is to make these groups community change agents which are there to scale out the developmental innovations and technologies.

Popularization of agricultural technologies

This is usually done through the media to advertise newly released technologies by outlining all its attributes. Use of farmer groups who have already adopted the new technologies to share the information about the new technologies is also important to see to it that the whole community is aware and are willing to adopt these technologies. With this kind of arrangement, peoples' attitude towards agriculture as a low profile job is reduced and even the youth seeing that agriculture has become one of the enterprises attracting the government' and the donors' attention have chosen to form themselves into groups so as to get help to practice modernized agriculture and help in the dissemination of new technologies, hence increasing job opportunities for the youth and reducing the threat of food insecurity in many communities.

Commercialization of agricultural produce

Besides the production of agricultural produce for home consumption only, more attention has been diverted to commercialization of the crops produced. The newly released high yielding crop varieties have caused many

households to produce more than usual and due to poverty and lack of capital to invest in other lucrative enterprises, the food surpluses are sold to urban communities to boost their income. This move to commercialize agricultural products and linking farmers to microfinance to access loans to increase their production capacity have changed the mind of many people who used to think that agriculture and all its related practices are for the poor and local people and not worth investing in. Farmers are now accessing loans to produce enough crops both for home consumption and for sale so as to generate some income for the households.

It has also been noted that most people do not take agriculture as an income generating enterprise because they are ignorant about the market opportunities. The research centre after identifying the groups to work with, selection of the food crop options, selection of income generating enterprises and linking producers to services that can boost production, forges ahead to link producers to potential buyers. This is done to encourage producers to take agriculture as a potential income generating enterprise which one can invest in and make money like any other enterprises. As mentioned above, the idea of linking producers to the market is to ensure that they produce what is being demanded in the market and produce what they can sell. Once the community sees that the organized groups are benefiting in all these ways, more members mobilize themselves into groups and start demanding services that can help them practice modernized agriculture to improve their livelihoods. This is a win/win situation.

Identifying the researchable issues

As all the above processes are going on, research scientists and the group members identify research issues arising from the experiments and the interaction of the scientists with the community. As the scientists get to know the community members well and a rapport is built, the community members start confiding in them and mentioning what they like and do not like about the newly introduced technologies. Through this interaction, issues worth researching come up which scientists can further look into as a way forward to improve on new technologies and identify gaps in technology adoption. As research is done on these identified research problems, technologies are improved and become popular for adoption, hence attracting more people in agriculture to reduce poverty and food insecurity.

Encouraging innovations

Communities in most cases ignore the resources that are locally available that could be of great importance in enterprise development. It is important that efforts are geared towards making people using the cheap or even some times free materials that can be used in income generation. An enterprise like brick making needs mainly local materials and yet mud bricks make even more beautiful houses than the concrete blocks that many people would love to invest in as an income generating enterprise and yet the start-up capital is not affordable by many

Conclusion

In conclusion, there is no area in Africa's development agenda that is not affecting the youth. A youthful population offers many economic advantages-in terms of a dynamic aggregate supply of labour, with all its implications for macroeconomic management, opportunities for mass production and hence industrial development-enhancing economies of scale in production, and a buffer for social security and pension systems. Attention and policies must

therefore be directed to activities and innovations that can create employment for the youth and promote food security in communities. Even as there is need to create employment and promote Agri-food production and consumption, critical issues like; the depletion and contamination of natural resources, pollution and food contamination as the drive towards food preservation, use of improved production technologies and processes, as well as products aimed at increasing agricultural yields and facilitating food conservation can also have significant environmental consequences if not properly managed. Even as efforts are being geared towards creating employment and enhancing food security, bio-safety and food safety are also important issues related to Agri-food production, processing and consumption. However, employment and wealth can be created by facilitating group formation, testing of technologies before adoption, identifying market opportunities, linking groups to microfinance institutions and input providers so that as a group their access to such services is eased and costs reduced, thus making them enjoy economies of scale which boosts both food security and income generation.

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Annex 5: ESSAY: Tapping the Potential of Science, Technology and Innovation in Agri-food Chains in Africa: Creating Employment and Wealth for Youths in Africa

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Introduction

Most of the countries in Africa, especially those in the sub-Saharan Africa (SSA) region, are experiencing profound socio-economic and political problems. These include unemployment, food insecurity, and disruptive conflicts. The high rate of population growth, relative to the growth of the economies, presents many challenges for the national governments. The challenges are not only the conservation and management of the environment as a result of loss of the productive capacity of soils and deforestation, but also pressing socio-economic issues such as inadequate health and education services and high unemployment.

Science, technology and innovation are interlinked. Economists have identified technical progress as the single most important determining factor for achieving sustained economic growth of a country or region. For example, North America and Western European countries are referred to as developed economies because of the advances they have made in scientific and technological research, not only in agriculture and natural resources management, but also in fields of medicine, engineering and electronics, and more recently in information and communications technology.

Importance of Agriculture

Despite the fact that most African governments have declared that agriculture forms the basic engine of economic growth, it is very unfortunate that those pronouncements are often not backed by clear economic policy support or guidance. A review of the agricultural sector in the last decade shows that the region has been facing perpetual staple food deficit and that most African states are net staple food importers. This adversely affects the trade balance and the overall balance of payments of most states. It also deprives most of them of the scarce foreign exchange which could be better spent on providing essential services such as health and education.

Several south-east Asia countries that were at the same level of development as SSA countries in the 1960s were propelled by the Green Revolution, to become fairly advanced in science and technology as evidenced by their industrial growth, food security situation and relatively low unemployment rates in the last two decades. However, this has not been the case for the SSA countries, mainly because the Green Revolution did not take place in Africa. Therefore agricultural growth and development are crucial to SSA countries for overall economic and social development.

In the year 2000, the United Nations adopted the Millennium Declaration stating eight Millennium Development Goals (MDGs) to be reached by 2015. All MDGs are related to sustainable reduction of poverty in its broadest sense. The reduction of rural poverty through addressing issues of improving food security and household income,

is addressed in MDG 1. Most organizations operating in the field of international development co-operation, e.g., the New Partnership for Africa's Development (NEPAD), World Bank, European Union, Department for International Development, Food and Agricultural Organization, the Technical Centre for Agricultural and Rural Cooperation (CTA), etc., consider agricultural development in SSA to be the engine for rural poverty reduction. Gains need to be made not only in improving household food security, but also in raising rural incomes.

Obstacles facing the youth in employment and wealth creation

Several factors could be attributed to the lack of employment opportunities and the poor potential for wealth creation in Africa. The high rate of population growth, which is not matched with the rate of economic development, is the single most significant factor in many countries. Given that most economies rely on basic agricultural production, very few jobs are created due to poor and slow industrial development.

Poorly developed markets and marketing infrastructure also contribute to unemployment. Rural areas where agricultural production takes place are poorly linked to the urban areas due to poor road networks. Post harvest handling and processing facilities are lacking or inadequate and the limited knowledge on small-scale post harvest handling and processing result in high wastage of perishable produce before delivery to markets. This greatly discourages production, and leads to loss of opportunities for self-employment and income generation within the rural areas.

Lack of investment in the rural areas has led to many youth migrating to urban areas in search of jobs that do not exist. The high poverty level often result in youth with "potential brains" for leading technological development, dropping out of school or if they receive education, owing to lack of jobs, migrating to developed countries (brain drain).

In most African colleges and universities, the education system is not effective or not very relevant to the needs of a country. For example in agricultural training, there is disproportionate focus on farming for subsistence i.e. to meet just basic food and nutritional needs as opposed to economic or business-oriented production, or the production of raw materials for export with little or no value adding. In the sectors of natural resources management e.g. wildlife, often no strategies are put in place to generate benefits for the local communities.

Poor political leadership and governance in most African countries have often resulted in civil strife. Nepotism and tribalism, which are said to be rampant in most governments, do not provide a conducive environment for attracting both local and foreign investment, which are a prerequisite for employment and wealth creation. Where civil strife occurs, communities are displaced, robbed of their livelihoods and in most cases made destitute. The significant mineral and other natural resources in Africa are therefore not providing benefit for the youth and all the people.

Role of agriculture, science and technology in employment and wealth creation

In most SSA countries, the agricultural sector contributes up to a third of the gross domestic product, and much more through linkages with manufacturing, distribution and service-related sectors. Moreover, a large proportion of the population lives in rural areas and depends mainly on agriculture for livelihood. Scientific research plays a key

role in creating new products or new and/or more appropriate techniques of production. This in turn provides employment and creates wealth. Two examples from Kenya to support the argument are illustrated here.

Tissue culture bananas have created new markets and new lives in central Kenya. Over the last two decades, banana production in Kenya and the rest of East Africa has been on the decline, mainly due to lack of clean planting material. Traditional methods of banana propagation perpetuated the problem of diseases and pests. Kenya Agricultural Research Institute, local universities and the International Service for the Acquisition of Agri-biotech Applications (ISAAA) researchers developed tissue culture banana, which is not only clean, but also high propagation capacity that provides large numbers of plantlets within a short time and take a short time to produce fruit. Many farmers have therefore benefited from the technology and now are producing enough, as both food crop and a cash crop. Working with commercial distributors, several hundreds of thousands of plantlets have been supplied. ISAAA also has provided a micro credit scheme for dissemination of tissue culture banana to smallholder farmers. Other agencies should be encouraged to provide similar technical and financial opportunities if Africa's technological development is to be assured.

Machakos district in eastern Kenya is semi-arid and has proved to be a challenging testing ground for innovative technologies in rain-fed farming. Water harvesting and soil conservation technologies have resulted in a tenfold increase in land productivity. Through soil and water conservation, minimum tillage, improved crop varieties, and agro forestry, farmers have efficiently utilized the scarce rainfall to increase land productivity. Population growth and education have also been a driving force for the agricultural intensification, because adoption of these practices required additional and skilled labour. Access to markets for the mainly horticultural produce and the availability of external inputs also provided impetus to stimulate growth and development.

Tapping the potential of agriculture, science, technology and innovation in agri-food chains

An effective tertiary education system in agriculture and natural resources management would contribute enormously to rural development. For the education system to be effective, the structure, content and delivery mechanisms for educational programmes must be linked to social and economic development needs. African colleges and universities should change their training programmes especially by improving relevance and quality. This can be done by involving the various stakeholders in curricula review and development, especially policy makers, farmers, industrialists and the private institutions that contribute to employment creation. Much focus should be put on value addition and development of entrepreneurial skills.

Researchers should develop and disseminate technologies for increased agricultural productivity and sound natural resource management or utilize the benefits offered by the emerging technologies including information and communication technology, and safe use of biotechnology.

Labour intensive investments should be encouraged to take advantage of the large pool of workforce available. Labour and investment experts have shown that labour employment in developing economies is more profitable compared to equipment-intensive approaches. There is also the advantage of creating jobs, therefore reducing poverty, with the additional advantage of being less costly.

Formulation of development projects that are sustainable, appropriate and have the support of the stakeholders is necessary. Past interventions to increase production and create employment, for example large-scale irrigation

projects, have not been very successful. Such large-scale projects have often left a trail of negative environmental impacts that have discouraged further development. Small-scale, land-user-oriented innovations such as rainwater harvesting can offer sustainable solutions to chronic food insecurity and create employment.

The SSA governments should translate their political commitment to agricultural development into concrete actions by providing the necessary resources and creating an enabling policy and institutional environment, such as credit and micro-finance, research and extension services, supply of quality inputs and capacity building. On the other hand, the international investor community should coordinate its efforts, and significantly increase and sustain financial support for African agricultural research.

The international agricultural research system, including the CGIAR Centers and advanced research institutions, should forge more effective and efficient partnerships with African National Agricultural Research Systems (NARS) and achieve greater programmatic integration. The CGIAR System has to ensure that the proposed changes in program, governance structure, and funding mechanisms are consistent and reinforce our efforts to achieve the African vision.

Annex 6: ESSAY: Tapping the Potential of Science, Technology and Innovation in Agri-food Chains in Africa: Creating Employment and Wealth for Youths in Africa

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An African youth could be defined as a young male or female aged between ages 18-35 years who has modest to high formal education, a winning personality with great potential of turning around every quagmire (as exists in most African states today) into potential havens of opportunities.

However, most youths in question are poor. Poor because they face the very structural challenges that keep them from getting the first foot on the ladder of development and not that they are lazy, no! The challenges faced by the youths range from the inability to access very basic necessities such as:

- Clean water;
- Productive soils; and
- Proper health care and education

The above challenges can be narrowed down and linked to the lack of productive soils and capital which are not only essential for leading a dignified life and being healthy but also make the economy work. Productive soils can be considered the basis of poverty alleviation and overarching all other major challenges. With meals on the table from the productive soils and enough to spare to earn income, one can access clean piped water for the home-stead, educate the dependants, afford proper health care and provide adequate shelter.

To achieve the above, proper structural procedures need to be followed in implementing any agri-food project or any other project to be successful:

- Proper planning;
- Setting up of good systems;
- Mutual accountability by all stake-holders and;
- Having proper financial mechanism.

Kithoka passion fruits project is a success story of such an initiative undertaken by public-private partnership in Meru Central and Embu districts in Kenya and I am fully involved. The project uses science, technology and innovation in tapping the potential of passion fruits in the central highland for the benefits of the locals in the area. The access of micro and small enterprises to business services offered by the private sector for identification and removal of constraints that inhibit commercial viability are well addressed in the project. Also addressed are the agronomical aspects of growing the fruits in addition to the marketing and distribution aspects. The initial problem addressed by the proposal was the acknowledgement that many farmers lacked the knowledge of proper farming

systems and had not fully transformed the management of their farms from a subsistence undertaking to a market-oriented one because of lack of capacity. Currently some farmers are making "good" money (some up to shs 50 000/= per month) through that initiative. (See Sunday Nation/May 8, 2005 page 17 under "the passion fruit comes in handy").

One farmer who has benefited from the project is the 30-year-old Kinyua. Kinyua who has a modest education, is married to a 24-year-old woman and has 3 children at primary school level. Kinyua has a 2 acre farm with piped water and has all along been farming at a subsistence level. All the earnings are used to feed the family and he also works on contract to meet their other needs. However, since the project was initiated Kinyua joined a group which raised some capital and established their own plant nursery which was large enough to cater for their seedling requirements. This was achieved after intensive training. Each farmer in the group received 200 vines, planted on ¼ acre land and managed the crop as per the training. After 7 months each farmer started earning an average gross of Shs 9 300 per month. (Shs.14 000-peak and Shs 7 000-off-peak).

For Kinyua, lack of the basic needs became a thing of the past as he is able to cater for all his family's needs and still have surplus, thanks to the new project. Using a similar approach, the following science and technology based innovative proposal that I am currently pursuing can contribute to creating employment and wealth for the youths in Africa.

The proposal is about the introduction of yet another potential but unexploited crop, the grain amaranth which focuses on first finding markets before rolling out the project. The expected outputs are enormous and feasible.

THE PROPOSAL

Sustainable Livelihood Improvement through Promotion of Grain Amaranth in Meru Central District

Introduction

Meru Central Districts is situated in the Central highlands regions which receive sufficient rainfall. The district falls under the mandate region of KARI-Embu.

KARI-Embu organization

KARI-Embu is a regional research institute mandated with the development of agricultural technologies through adaptive, applied and on-farm research of improved crop and livestock practices geared towards diversifying production systems hence alleviating poverty through improved quality-livelihood. Poverty levels are alarming and are of great concern in the world today. KARI develops and disseminates technologies in collaboration with other stakeholders, which contribute to sustainable improvement of livelihood for majority of farmers in the rural areas where poverty niche is very high.

The region

Farmers in the said district fall in the UM1 and UM2 zones that are suitable for coffee and tea farming. However, due to the recent global recession, inflation and depressed incomes from these cash crops, the incomes have seriously been affected resulting in escalating levels of poverty. As such there is need to search for an alternative source of income. Intensification of fruit crops and horticultural products has not yielded reasonable remedy to this problem due to the high cost of chemicals and poor market for the produce. Farmers continue to be poor. Therefore, it is prudent that we introduce a more sustainable crop to farmers like the amaranth seed.

Amaranth seed

Amaranth seed is a newly introduced but locally adapted cereal that is in great demand for export and also for local market (as cereal, flour making and popcorn production). Moreover, the thinned leafy vegetables are consumed as vegetables and the harvested residues are used as animal feed. Initially locals utilized Amaranth as vegetables. It was also used as fodder for animals. Amaranth is easily adaptable to different environmental conditions and is tolerant to most pests and diseases thus requiring fewer chemicals. This reduces the high costs of purchasing them. Amaranth therefore, can contribute to improving the livelihoods of most rural farmers who have adequate irrigation and good crop husbandry knowledge.

Broad objective

To introduce and promote amaranth seed production by small-scale framers through improved crop husbandry and market.

Specific objectives

1. Train farmers on propagation and field management skills
2. Link farmers to market outlets
3. Establish demonstration plots for farmers to learn
4. Provide regular backstopping measures to participating farmers

Methodology

Training of farmers will be carried out after identification of groups and new groups formation. Training will be on-farm and on-station.

Groups identification

Serious farmer groups who use irrigation methods will be identified and registered for the project and training programmes. This will be done in collaboration with the Ministry of Agriculture extension staff who keep such records.

Groups formation

New groups will also be formed by a KARI managed field extensionist, to be recruited as the ground coordinator. There will be 4 coordinators in every district each manning focal areas. The district will be divided into 4-focal areas. Each extensionist will be required to form/or work with 25 groups each with a membership of at least 30 members. All the groups have to be registered with the relevant ministry department.

Demonstration plots

One demonstration plot in each district will be set up for purposes of training farmers as well as demonstrating the best crop husbandry. The plots will be set in such a way that a new crop will be planted in the field on a fortnightly basis such that both the individual or groups of farmers who tour the sites will be able to see the various stages of crop development and learn the care involved at each stage. One KARI staff will always be based at each demonstration plot. Established farmer-groups will also identify a centrally located member whose farm will be selected to set up a demonstration plot for individual farmer groups to learn.

Actual training

0n-farm training of farmers

Training of farmers at field level and training of trainers will be the biggest part of this project. Emphasis will be put on hands-on training in the field. This will include the Ministry of Agriculture staff. KARI team will always train farmers in their localities. They will also be involved in regular backstopping through monitoring what farmers are doing and providing remedial measures in case there are problems.

On-station training of farmers

Groups of farmers as well as individual farmers will be trained at the established demonstration plots, which will always be manned by a KARI technical staff.

Linking farmers to market outlets

KARI together with other stakeholders will hold joint forums that will inform farmers of the already existing market for amaranth seed. This will serve to motivate farmers who have been having problems with accessing markets for most of their produce. Seeds will be provided using the market link person.

Promotion/Market Campaign

Promotion and marketing of the new amaranth seed production will be done to increase demand and encourage the farmers who would wish to start the grain production. This will be done using the following methods:

1. Direction signboards will be placed in strategic positions to direct farmers to the demo sites.
2. Pamphlets on grain production will be prepared to aid farmers on the crop production.
3. Articles on the crop will be put in the local (regional) newspapers as a motivator to would be interested farmers
4. Appraisal meetings will be announced in most listened fm stations.

Work Plan for the Proposed Activities

Activity	Time frame (month)											
	1	2	3	4	5	6	7	8	9	10	11	12
Recruitment and training of support staff (Field extensionists and MoA staff)												
Group identification and formation and on-farm training												
Establishment of demonstration plots												
On-station training												
Linking farmers to market outlets												
Erection of direction sign boards												
Pamphlets preparation												
Articles publication in local press												

Expected output

1. Knowledge gained on the grain amaranth propagation and field management.
2. Improved monthly income of at least Shs 12 500.
3. Extra option for the food range for both animals and humans.
4. Improved livelihood for at least 3000 framers.
5. Job opportunity for 6 coordinators and extension officers.

With such quantifiable expected outputs jobs and wealth can be created for many youths in Africa and the perception that white-collar jobs are the only paying ones can be done away with.

Annex 7: Testimony on HIV/AIDS, by Elizabeth Atieno, Maxfacta

My name is Elizabeth Atieno, a Kenyan lady 27 years of age. I have been living positively since I was infected. I was sure of the person who infected me since I used to donate blood every year and also because I used to test myself. I thought he was okay health wise but I was wrong because I didn't even go for testing due to ignorance.

I used to blame him. I was going crazy and even reported him to the police. I went to see the pastor and told him that I tried to take my life but for some reason I didn't die. It was God's miracle. Since that time I had given up hope of living. I didn't eat or bath for a week but after the visit to the pastor I decided to live again. I joined a support group, I was amazed to find many people living positively but I later began coping with the situation.

I decided to cooperate with the other youths who were infected like me and formed a youth groups of positive-thinking youth because we didn't want to infect other HIV negative persons. In our support group we discussed issues affecting us, such as the challenges we faced. Some people who are affected help us fight the stigma through communication campaigns. We started the project in the year 2003, by contributing money every month.

I also work with International Youth, the global network of people living with HIV/Aids and am also a youth representative. We are planning to start a similar project in the Netherlands purely for people living with HIV so as to discuss key issues as we try to help others. This year we are organizing the upcoming ICASA conference in Nigeria. I have also participated in the 16th International Conference on HIV/AIDS in Bangkok, Thailand, where I presented a paper on behalf of all positive youth globally.

I decided to concentrate on issues affecting the youth .I contracted the disease because of ignorance hence I want to communicate to them. Joking as a group is therapy for us. It is said that it takes 78% of your energy when you are angry while only 12% of your energy is used up when you are happy. I live fully like there is no tomorrow and I believe I won't die from AIDS. I have lived with the disease for four years. I am hoping daily that the HIV cure will be found.

Some of the activities we involve ourselves in include drama where members give real life experience on HIV/AIDS to educate the youth. We make and sell detergent and shoes. We sell the detergents for $10 or Ksh.500. The little money we get is used to buy drugs for opportunistic infections and the general upkeep of the HIV infected youth.

Annex 8: Testimony on HIV/AIDS, by Caroline Sande

I am a mother of two. My children are HIV negative. I represent the National Empowerment Network of People Living with HIV/AIDS in Kenya. I wear several hats: GIPA volunteer with the Kenya Red cross society, Youth group - campaigners for an AIDS free society run by our artists in Kenya, for example, Maji maji is our role model. I went through trauma before I got the support after I joined women fighting AIDS in Kenya.

I decided I would live again for my children and I went back to campus, currently I am taking a parallel degree programme on Psychology and Counseling. I have conducted many training courses with the youth. I have traveled extensively. When I first tested HIV positive in 1997, I suffered a lot of stigma. My own mother stigmatized me, but I don't blame her. She didn't know how to behave at that time because she didn't know where to get the right kind of information. It even made me want to commit suicide at one time. I wanted to kill the people I lived with in the same house. I am a person who has been taken to court because, where I live, people thought I was going to infect the other tenants within the plot. Nobody wanted me to use the same toilet, same washing facilities, or hang my clothes out to dry with the rest.

I couldn't take it anymore; there was this neighbour who decided to tell the whole world that I am HIV positive. She traumatized me and made sure I was going to my grave. I talked to God and asked Him to intervene for me. As usual before I left home in the morning, she would tease me, calling me all sought of names like a walking corpse and a person suffering from tuberculosis (TB). I have personally never suffered from TB since I tested HIV positive. I hit her with a hammer, I was taken to the police station, to court but God never forgets his people. A lawyer just came up from nowhere and took up the case for me. The lawyer intervened for me free off charge and I was acquitted.

My daughter was denied the chance of joining school for a class 1 position. Since they saw her mother on the screen as HIV positive, they thought her daughter who is HIV negative would infect other children with the HIV virus. I was once thrown out of where I was living. I went to the rent tribunal, and then I knew my rights. The landlord was summoned to appear before the court of law and was instructed to take me back as a tenant. He claimed that people were leaving the plot because of my HIV status and if he did not evict me they would deal with him accordingly.

I am a person who knows my rights and no one can play with me. I am proud to say that it's just two weeks ago when I was elected the secretary general for KELEI- Kenya Legal and Ethical Issues in Kenya. I am in the heart of fighting for the rights of AIDS victims because I have known what it means to go through stigma and discrimination. I make sure I fight for the rights of people living with HIV/AIDS. I have been on ARVs treatment for the last two years. I am very fortunate because I get the drugs free of charge from Medicine Sans Frontiers.

I conclude by saying that please help us fight stigmatization and discrimination because it is not the virus that is killing us but the stigma. You have already drawn a line and put us aside that you people are better than us which is not the case. You are making us feel as if we want to infect you deliberately. If you deny my daughter a chance to be in the same school as yours where do you expect her to school? If you throw me out from my residential place because I have HIV/AIDS what do you expect me to do as a human being. Let us incorporate people living with HIV/AIDS into society.

Let me discuss about GIPA and the greater involvement with people living with HIV/AIDS. The 1994 Paris AIDS Summit, 42 national governments declared the principle of greater and meaningful involvement for people living with HIV/AIDS. GIPA is critical to ethical and effective national responses to the epidemic. At the most basic GIPA means two important things:

- Recognizing the important contribution people infected/affected by HIV/AIDS can make to the response of the epidemic.
- Creating space within society for their involvement and active participation.

Please send the right messages when you go back to your countries and help us fight stigma and discrimination.