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Bio-Resources Innovations Network for Eastern Africa Development
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REPORT OF THE ENTREPRENEURSHIP TRAINING FOR BIOSCIENTISTS IN EASTERN AFRICA

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Report of the Entrepreneurship Skills Training for Bioscientists in Eastern Africa

3rd and 4th May, 2012 | Silver Springs Hotel, Nairobi, Kenya

BIPCEA partners

Africa Technology Policy Studies Network (ATPS)

Addis Ababa University (AAU)

Tanzania Commission for Science and Technology (COSTECH)

Directorate of Science, Technology and Research (DSTR), Rwanda

International Livestock Research Institute (ILRI)

International Service for the Acquisition of Agri-biotech Applications (ISAAA), AfriCenter

Ministry of Science and Technology (MoST), Federal Democratic Republic of Ethiopia

Kenya National Council for Science and Technology (NCST)

Stockholm Environment Institute (SEI)

Uganda National Council for Science and Technology (UNCST)

The African Technology Policy Studies Network (ATPS) is a multi-disciplinary network of researchers, private sector actors and policy makers promoting the generation, dissemination, use and mastery of science, technology and innovation (ST&I) for African development, environmental sustainability and global inclusion. ATPS intends to achieve its mandate through research, capacity building and training, science communication/dissemination and sensitization, participatory multi-stakeholder dialogue, knowledge brokerage, and policy advocacy.

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1. Background

Science, technology and innovation (STI) policies are currently at the heart of national development discussions in Africa. In Eastern Africa, governments are beginning to actively support STI development[1] including biotechnology as tools for modernizing agriculture and ensuring environmental sustainability. In all Eastern Africa countries, STI policies are beginning to take root. Some Eastern Africa countries, like Tanzania, are reviewing their S&T policies, while others, like Uganda, are preparing strategies and plans for their implementation. This renewed emphasis on STI as a driver for economic growth and sustainable development reflects the African Union's (AU's) commitment to advancing S&T on the continent and in some ways addresses the goals of AU/NEPAD Africa's Science and Technology Consolidated Plan of Action, 2006-2010.

Arguably, the continent, and Eastern Africa in particular, could have a competitive edge in developing a bio-resource based economy. Already, revolutionary advances in the field of bio-sciences are changing conditions for utilization of biological resources worldwide, including Eastern Africa. The application of modern biosciences is, for example, assisting in crop and animal breeding and improving efficiency in the production of disease and pest resistant cultivars for small scale farmers. Advances in the field of biosciences could present new agro-processing opportunities, lead to diversification of small-holder production, and increase demand for local crops, thereby improving rural livelihoods. In addition, bioscience innovations will help agro-process industries become more productive and more sustainable whereby agro-waste could be converted into valuable products such as feed, bio-energy and other valuable by-products while at the same time reducing environmental impacts. Bio-Innovate, coupled with the BIPCEA project, is uniquely positioned to support the necessary institutional change for countries to benefit from emerging opportunities foreseen with bioscience innovations.

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[1] *For a recent analysis of STI policies in East Africa, see: Brenner, C., J. Komen, R. Kingamkono, J. Ecuru, J. Omari, D. Njubi, H. Opolot, and P. Chuwa. 2010. Fostering Bioscience Innovation: Lessons from BIO-EARN. Kampala, Uganda: East Africa Regional Programme and Research Network for Biotechnology, Biosafety and Biotechnology Policy Development.*

In most of the Eastern African countries, the necessary organizations and policies seem to be in place, which should provide a more enabling environment for the biosciences. However, policy coordination between different branches of government within a country is often lacking. For example, this is true in the development of policies and regulations regarding intellectual property protection and biosafety. The key to addressing this gap is in forging links among key actors at an appropriate time in the innovation cycle and, more particularly, in the life cycles of the innovations in question. These links will vary with the type of technological innovation (e.g. agricultural, environmental, or industrial) and will depend on whether the innovation will be disseminated through commercial (market) channels, as in the case of "public good" technologies, or through non-market channels.

The BIPCEA project will help ensure that STI investments generally, and Bio-Innovate efforts, in particular, result in tangible products and innovations in partner countries. This will be done by tackling a number of important regional policy challenges affecting bioscience innovations in the region, which will include, among others, limited access to new, affordable and eco-friendly technologies for crop production and agro-processing; difficulties in information exchange, including sharing of germplasm and its fair and equitable utilization; and few sustainable financing mechanisms for value addition activities and for creation of bio-based business enterprises.

It is against this background that the African Technology Policy Studies Network (ATPS) engaged the Kenya Kountry Business Incubator (KeKoBI), led by its Chief Executive Officer, Professor Atieno Ndede-Amadi, as the Lead Consultant to undertake an assessment of the Eastern Africa business entrepreneurship environment and use this information as a reference point for training bio-scientists from Eastern Africa's research and academic institutions in entrepreneurship in bio-science innovations. The purpose of the training was to improve the quality of entrepreneurship for bio-sciences innovations in Eastern Africa. More specifically, the training was aimed at:

> Building up the capacity of bio-scientists by equipping them with the knowledge and skills necessary for bringing out the innovations in their research projects;
> Developing skills of bio-scientists for transforming innovative research ideas into commercializable products;
> Introducing bio-scientist to the dynamics of becoming an entrepreneur and establishing businesses for their innovative ideas and products
> Strategies for influencing policy decisions in their Eastern Africa countries;
> Training of Trainers (ToTs) in order to impart the knowledge and skills acquired from this entrepreneurship training to other members of their teams (and beyond).

1.1 Workshop Methodology

The training adopted a stakeholder participation approach so as to ensure active participation of each stakeholder in the identification of challenges, opportunities and strategies for becoming a successful entrepreneur and in subsequent discussions. Each of the seven segments of the workshop began with opening remarks from the primary facilitator, followed by a short lecture with brief intermittent questions and remarks, followed by a facilitated question and answer (Q&A) session.

1.2 Expected Outcomes

> Acquisition of requisite skills and knowledge on successful:
  - enterprise establishment through feasibility studies and business plans
  - small business operations and management
  - technology transfer and commercialization of research innovations
  - technology licensing and intellectual property

> Entrepreneurial skills and knowledge for translating innovative ideas into commercializable products;

> Enhanced ability to establish and run successful enterprises capable of generating employment out of innovative ideas to fill youth employment gaps, in the long run.

1.3 Expected Outputs

> An Entrepreneurship Training Manual for Bio-Sciences

> A workshop Report

2. Workshop Opening Remarks

The workshop opening remarks were done by Dr. Nicholas Ozor, Senior Researcher at ATPS, on behalf of Prof. Kevin Urama, Executive Director of ATPS, who was away on international travels. Dr. Ozor welcomed participants to Kenya, to Nairobi, and to the two-day training workshop. He proceeded to explain the rationale for the training and to underscore its significance. Specifically, he pointed out that the training is very useful, not only to the individual participants, but also to both the team members of their projects at home and to their countries at large. He pointed out that having gone through this training, which was also considered a 'training-of-trainers', it was expected that participants would launch and facilitate similar trainings in their own countries thereafter. He then wished them successful deliberations at the workshop and a good stay in Nairobi for the two-day duration of the training.

On behalf of the Executive Director of ATPS, welcomed and thanked all the participants for their participation in the important training on entrepreneurship for Bio-Scientist in Eastern Africa. He reiterated the importance of the BIPCEA project in filling an important gap in providing a link between overall bioscience and STI policy initiatives in the region; international and regional initiatives for bioscience capacity development and existing research networks in the region, thereby making important contributions to STI development in the region. He reminded the participants of the objectives of the workshop which is to build the capacity of the bio-scientist in entrepreneurship in order to equip them with the requisite skills and knowledge for small enterprise establishment, management and operations, techno-economic feasibility, due diligence and technology licensing among others in their respective countries. He emphasized that enhancing the capacity of bio-scientist was crucial to fully harness the potentials of bio-innovations for sustainable African development. He noted that acquiring this capacity, required regular experiential learning through systematic training programmes for key actors in the sector. He thanked the Lead Consultant and her

team from the Kenya Kountry Business Incubator (KeKoBI) for accepting to train the participants. In conclusion, He urged the participant to participate actively in the training and ensure that the goals of the workshop are realized at the end.

3. Introductions & Leveling of Expectations

Dr. Ozor undertook introductions of all delegates that were present at the workshop. He started by introducing the ATPS team that was present to facilitate the workshop. He then proceeded to introduce each of the training participants present, and concluded by introducing the team of consultants facilitating the training. Dr. Ozor then proceeded to level expectations of participants by giving a brief introduction of the content of the training and the modalities of executing the training. He took participants through the two-day programme, pointing out the topics to be covered in each, and the duration of each topic. He drew the attention of participants to the programme, pointing out that there were a total of four sessions, two mornings and two evenings, and that there would be an open forum or a discussion period at the end of each session. This notwithstanding, participants were encouraged to ask questions and to give remarks during content presentation. At this point, Dr. Ozor invited the Lead Consultant, Prof. Ndede-Amadi, to begin the training.

4. Setting the Stage

The Lead Consultant took participants through a series of key topics that are essential to adequately prepare bio-scientists to venture into the arena of entrepreneurship for the purpose of commercializing their innovative research ideas and products. She discussed some key issues which she has come to believe underlie the relative lack of success in entrepreneurial endeavours in the region and the continent. She expressed concern that entrepreneurship has eluded Africa and Africans for a long period of time now, and this has contributed to the low success rates in establishing and sustaining businesses in Africa. She pointed out that the content of the two-day training would cover a total of eight (8) topics which constitute key strategies for building a strong entrepreneurial foundation for business, and which would include: strategies for establishing a successful enterprise; identifying an innovation that can be commercialized; managing a small business; feasibility study development; business plan development; ethics in running a small business; technology licensing; and Intellectual Property (IP).

5. Entrepreneurship in Economic Development

To underline the role of entrepreneurship in economic development, the Lead Consultant took participants through a case study of Kenya in the context of ICT–enabled entrepreneurship. The case study looked at the impact of ICTs on SMEs, the challenges faced by SMEs, the national policy and regulatory environment, Kenya's ICT SME landscape, business incubation as a mechanism for increasing the survival rate of SMEs, business incubation in Kenya, and the link between research, policy, and practice in the context of business incubation.

5.1 Business incubation

The case study pointed out that business incubation has been identified as an intervention mechanism that can help alleviate much of the ailments in the SME sector, and as a possible intervention mechanism that can help address the entire spectrum of the SME business environment challenges. Like any other method of intervention, however, business incubation can only be effective in the face of enabling policies and regulations. In Kenya the policy and regulatory environment regarding SMEs has been found to be either structurally weak or non-supportive. A robust supportive environment made possible by adequate business incubation policy frameworks is, therefore, necessary. Brazil was discussed as the case study of a country where research has informed policy that has in turn informed practice with tangible successful results. For example, the survival rate of new technology-based firms in Brazil was well above 90% over a five-year period. By 2009, Brazil was able to attribute part of its GDP growth to the higher survival rate of small businesses – especially in the technology sector.

5.2 Case Study Takeaways

Takeaways from the study included the following:

> ICTs have contributed positively to SME growth, not only in Kenya, but throughout the globe

- the growth of SMEs has had positive contributions to economic development
- the business environment In Kenya has been hostile to SME growth due to a number of factors including a poor policy and regulatory environment, poor financial systems, technological challenges, and lack of development support services – which include education and training
- with regard to development support services, the study found that owner managers with more education and training were more likely to be successful than their counterparts with less education and training
- with regard to technological challenges, the study concluded that SMEs are incapable of sourcing, evaluating, and adapting technologies effectively independently and so government policies should aim to develop these capabilities in SMEs through supportive institutions
- with regard to finance, the study found that the combined need for finance and the lack of access to SME friendly lending has led to the rise of Pyramid Schemes that promise hope for SMEs seeking alternatives

5.3 Case Study Conclusions

The study reviewed the strategic utilization of ICTs in the SME sector in Kenya. The goal was to identify ICT utilization trends in the SME sector and how it has influenced business growth and competiveness. In spite of the relative success of ICT SMEs, the study observed that inadequate financing of SMEs in Kenya had curtailed ICTs' leverage in business development. Attempts by SMEs to seek alternative financing instruments have largely failed due to lack of supportive regulations in the financial markets. The study found that, in general, financial institutions were reluctant to provide financing at the infancy stages of a business, with most of them waiting to finance SME at the growth stage, when the future was more predictable. The study also observed that financing institutions are reluctant to finance technology startups, probably because technology does not provide for good collateral. Among the challenges facing SMEs is lack of growth and development support services. For example, business owners have been found to have inadequate ICT skills and access and, therefore, fail to take leverage from their technological investments. It concluded that studies on ICTs' support to business have shown that strategic investments in ICTs can enhance growth, profitability, and competitiveness and that the role ICTs have played in SME growth and development has been major.

6. Establishing a Successful Enterprise

Prof. Ndede-Amadi indicated that in order to start, operate and grow a profitable small business, there are certain key intrinsic and extrinsic components such as attributes, behaviors, attitudes, and practices that must be fully developed, implemented, and managed by a small business owner. These include: doing what you enjoy; taking what you do seriously; planning everything; managing money wisely; asking for the sale; remembering it's all about the customer; becoming a shameless self-promoter (without being obnoxious); projecting a positive business image; getting to know your customers; leveling the playing field with technology; building a top-notch business team; becoming known as an expert; creating a competitive advantage; investing in yourself; being accessible; being knowledgeable; building a rock-solid reputation; selling benefits; getting involved; grabbing attention; mastering the art

of negotiations; designing your workspace for success; getting and staying organized; taking time off; limiting the number of hats you wear; and following-up constantly. Throughout the content presentation, she backed each of these components with practical examples of successful entrepreneurs and entrepreneurial initiatives, either from her own personal observations and experiences or from the entrepreneurial and small business development literature.

7. Identifying an Innovation that can be Commercialized

The Lead Consultant outlined five important considerations necessary for identifying potential innovations that can be commercialized, which include commercialization; technology transfer; technology process, technology readiness; and commercializable Innovations. A comprehensive definition of each concept was provided. Commercialization was defined as the process that converts ideas, research, or prototypes into viable products that retain the desired functionality. The commercialization process was defined as having the following three key aspects:

> looking at several ideas to identify one or two products or businesses that can be sustained long-term (the funnel);
> a stage-wise process where each stage has its own key goals and milestones; and
> involvement of key stakeholders early, including customers

Technology transfer was defined as the process of sharing skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among universities, industry, governments and other institutions. The technology transfer process was defined as that of identifying research which has potential commercial interest and developing strategies on how to exploit it. Technology Readiness Level (TRL) was defined as one of several available methods of identifying an innovation that can be commercialized, and a measure to assess the maturity of evolving technologies prior to commercialization. The advantages of using TRL include the following:

> It provides a common understanding of technology status
> It is a tool for risk management
> It is useful for making decisions concerning funding of the transfer process
> It is useful for making decisions concerning transition of technology

On commercializable innovations, it was observed that management needs to continually

focus resources on the innovations with the greatest potential for commercial success; determine which innovations are truly capable of producing new wealth; focus on the innovations that are truly the right ones to put money and resources behind; separate the truly viable innovations from all the rest; understand that commercial viability is what separates an excellent innovation from good ones; and identify 'if', 'why', or 'why not' an innovation has the potential for commercial success.

On commercializing Innovations, it was pointed out that any business that intends to commercialize an innovation should first undertake an analysis of the innovation's profit extraction potential. A few internally developed tools that can prove useful in identifying innovations for commercialization were identified as a questionnaire for ranking innovations and commercializability criteria for evaluating a technological invention. On commercialization Strategy, the series of financing options that a company may consider when moving its technology from concept to the marketplace were discussed.

8. Managing a Small Business

In this part of the training, the Lead Consultant highlighted pertinent areas critical to running a successful small business. It explored problems faced by small businesses, the legal environment, the competition, sourcing for funds, and publicity for the business. The fundamentals required for creating a viable venture were also discussed. A small business was defined as a business that is privately owned and operated, with a small number of employees and relatively low volume of sales. Among the advantages of a small business, are that a small business can be started at a very low cost and on a part-time basis. Among problems faced by small businesses, it was pointed out that they often face a variety of problems related to their size, and that a frequent cause of bankruptcy is undercapitalization. On marketing the small business, it was discussed that finding new customers is one of the major challenges for small business owners.

On principles of small business management, it was posited that managing a small business is not fundamentally different from managing a large organization. One major difference, however, is that a small business is generally run and managed by an owner manager, who is often the entrepreneur him/herself, whereas a large corporation is often run by a manager who does not necessarily own shares in the company, and that the rest is just a matter of differences on scale – a small business operates on a very small scale compared to a corporation. The four basic management concepts that allow any organization to handle planned, tactical, and set decisions as planned, that give rise to the four concepts of management which are to plan, organize, direct, and control – were discussed.

With regard to growing the business, the following four over-arching strategies for growing a business were discussed:

> Get more customers
> Get customers to buy more frequently
> Get customers to spend more money per transaction
> Keep customers longer

The following ten (10) strategies for expanding a business were discussed: open another location; offer the small business as a franchise or business opportunity; license the product; form an alliance; diversify; target other markets; win a government tender; merge with or acquire another business; expand globally; and expand to the Internet.

9. Feasibility Study

A comprehensive business feasibility study contains detailed information about the business structure, the products and services, the market, logistics of how the business will actually deliver a product or service, the resources needed to make the business run efficiently, as well as other information about the business. The importance of a feasibility study is captured in the following activities:

> Listing in detail all the things you need to do to make the business work;
> Identifying logistical and other business-related problems and solutions;
> Developing marketing strategies to convince a bank or investor that your business is worth considering as an investment; and
> Serving as a solid foundation for developing your business plan.

The Components of a Feasibility Study include the following:

> *Description of the Business:* The product or services to be offered and how they will be delivered.
> *Market Feasibility:* Includes a description of the industry, current market, anticipated future market potential, competition, sales projections, potential buyers, etc.
> *Technical Feasibility:* Details how you will deliver a product or service (i.e., materials, labor, transportation, where your business will be located, technology needed, etc.).
> *Financial Feasibility:* Projects how much start-up capital is needed, sources of capital, returns on investment, etc.
> *Organization Feasibility:* Clearly states what legal and operational structure will work for the organization. These include professional skills necessary for achievement of its aims.

10. Business Plan

If the feasibility study indicates that the business idea is sound, the next step is a business plan. The business plan continues the analysis at a deeper and more complex level, building on the foundation created by the feasibility study, and has three primary functions:

> To serve as an Action Plan
> To serve as a Road Map
> To serve as a Sales Tool

Before beginning to write a business plan, however, it is important to consider the following four core questions:

> What service or product does your business provide and what needs does it fill?
> Who are the potential customers for your product or service and why will they purchase it from you?
> How will you reach your potential customers?
> Where will you get the financial resources to start and run your business?

Parts of the business plant will generally include the following:

> Descriptive Narrative of Your Business
  Without going into detail, this section should include a high level look at how all of the different elements of the business fit together.
> The Executive Summary
  The executive summary is the most important section of the business plan as it provides a concise overview of the entire plan along with a history of the company. Contents of the Executive Summary include the following:
> The Mission Statement briefly explains the thrust of your business. It could be two words, two sentences, or a paragraph. It should be as direct and focused as possible, and it should leave the reader with a clear picture of what your business is all about
> Date business began
> Names of founders and the functions they perform

- Number of employees
- Location of business and any branches or subsidiaries
- Description of plant or facilities
- Products manufactured or sold /services rendered
- Banking relationships and information regarding current investors
- Summary of company growth including financial or market highlights (e.g. your company doubled its worth in a 12-month period; you became the first company in your industry to provide a certain service)
- Summary of management's future plans

10.1 General Company Description

In this section is articulated the Vision and Mission Statements of the business, its goals, objectives, and business philosophy. A general company description mainly dwells on the current status of the company and provides a brief of its future operations. "What business am I really in?" is a question that informs the purpose of the business and one that every business owner has to ask himself.

10.2 Operational Plan

Every business should have a plan for its operations which should address issues of service or product line, production, location, accessibility, the legal environment, inventory, suppliers, personnel and management, and credit policies, among others.

10.3 Organization & Management

This section should include the company's organizational structure, details about ownership of the company, profiles of the management team, and the qualifications of the board of directors. Who does what in the business? What is their background and why are they being brought into the business as board members or employees? What are they responsible for?

10.4 Professional Advisory Support

Many businesses use outside advisory and support services in addition to management and other personnel.

10.4.1 Board of Directors

The major benefit of an unpaid advisory board is that it can provide expertise that the company cannot otherwise afford. A list of well-known, successful business owners/managers can go a long way toward enhancing the company's credibility and perception of management expertise.

10.5 Marketing Plan

The market analysis section of the business plan should illustrate knowledge about the particular industry the business is in. It should also present general highlights and conclusions of any marketing research data that has been collected. This section should include an industry description and outlook, target market information, market test results, lead times, and an evaluative assessment of the competition (specific details of the marketing research studies should be moved to the appendix section of the business plan).

10.6 Personal Finance

Personal finance is the application of the principles of financial economics to an individual's financial decisions. In this section the following information should be included:

> How much money will you need at various points in the future?
> How do you go about getting that money?
> What is your annual income?
> How can you increase your income?
> What are your annual expenses?
> How can you reduce your expenses?
> How do you best budget for your available income each year?
> How much money can you save each year?

Include personal financial statements for each owner and major stockholder, showing assets and liabilities held outside the business and personal net worth. Include the following information:

> Who are the partners in the business and what is their net worth?
> Where is your operating capital going to come from?
> What are the possible sources of capital finance?

10.7 Capitalization & Startup Expenses

Capitalization denotes the total amount of funds used to finance a firm's balance sheet and is calculated as market capitalization plus debt. Market capitalization is the number of common shares multiplied by the current price of those shares. Capitalization, therefore, is a measure by which we can classify a company according to size. Starts-up expenses, on the other hand, are the resources applied on the conceptualization, onset and early stages of the development of a business entity.

10.8 Financial Planning

The broader financial plan consists of a 12-month profit and loss projection, a four-year profit and loss projection (optional), a cash-flow projection, a projected balance sheet, a break-even analysis, a ratio analysis, and a sensitivity analysis. Together they constitute a

reasonable estimate of the company's financial future. Most importantly, the process of thinking through the financial plan improves insight into the inner financial workings of the company.

10.9 Funding Request

In this section, you will request the amount of funding you will need to start or expand your business. If necessary, you can include different funding scenarios, such as a best and worst case scenarios, but remember that later, in the financial section, you must be able to back up these requests and scenarios with corresponding financial statements. You will want to include the following in this section:

> your current funding requirement
> your future funding requirements over the next five years
> how you will use the funds you receive, and
> any long-range financial strategies that you are planning that would have any type of impact on your funding request.

11. Ethics in Running a Small Business

Regardless of size, all businesses have the same objective, that of making profits, which necessitates the same operational model. Therefore, business ethics and related issues such as corporate social responsibility (CSR), are not just big business issues, they are issues core to small business as well. Ethical business practices include assuring that the highest legal and moral standards are observed in relationships with the people in the business community – including the most important person in the business - the customer. Ethics involves learning what is right or wrong, and then doing the right thing. However, "the right thing" is relative. Most ethical dilemmas in the workplace are not simply a matter of choosing between right and wrong, it is often much more involved than that.

11.1 Business Ethics

The concept of business ethics has come to mean different things to different people. However, it is generally regarded as knowing what is right or wrong and doing what is right in the workplace, with respect to their effects on products or services and with regard to stakeholders.

11.2 Managing ethics programs in the workplace

A business can manage ethics in the workplace by establishing an ethics management program. Ethics programs convey company values, often using codes and policies to guide decisions and behavior, and can include extensive training and evaluation, depending on the organization.

11.3 Corporate Social Responsibility

Corporate Social Responsibility (CSR), also called *corporate conscience, corporate citizenship, social performance, or sustainable responsible business* is a form of corporate self-regulation integrated into a business model. CSR policy functions as a built-in, self-regulating mechanism through which a business monitors and ensures its active compliance with the spirit of the law, ethical standards, and international norms. The goal of CSR is to embrace responsibility for the company's actions and to encourage a positive impact of its activities on the environment,

consumers, employees, communities, stakeholders and all other members of the public sphere who may also be considered as stakeholders.

11.4 Ethics in a Small Business

A small business owner, just like any other business owner, needs to behave ethically, and has to accept responsibility for the impact the business has on society. To develop a code of ethics for the small business, use the following guidelines:

11.4.1 Identify the general principles that would lead to fair business practices

11.4.2 Check with the industry association for basic standards to review

11.4.3 Allow that ethical questions do not always have a unique, faultless answer

11.4.4 Write out specific statements that will assist in making day-to-day ethical decisions

11.4.5 Apply the code of ethics to a written policy and procedures manual identifying major rules for operating the business

11.4.6 Train employees (and family members) to make ethical decisions about the business

12. Open Forum

12.1 One participant underlined the crucial nature of research and policy in the development of business incubators and entrepreneurship in Eastern Africa countries. He was of the opinion that these countries have failed to clearly define small and medium enterprises (SMEs) and micro and small enterprises MSEs), and to draw a line between the two. He noted the importance of research and policy in enhancing practice and pointed out that until we can put policies in place that will define the standards of what MSEs and SMEs produce, regulate their activities in terms of the quality of their products, then they will continue to languish in sub-standard products, hindering their capacity to grow. It is therefore necessary for researchers to link up and to effectively interact with policy makers to educate them on research findings and to lobby them to enact policies based on information given to farmers by researchers.

12.2 A second participant asked whether there is an environment that promotes local incubation. For example, is the selection process for incubated companies rigorous enough to ensure success at the end of the incubation programme?

12.3 A third participant wanted to know where business incubation, which had dominated their earlier discussions, should be hosted. He asked whether business incubation programmes should be based in academic institutions or if they should be in the hands of the private sector or whether they should explore the public-private partnership approach. In her response, the Lead Consultant emphasized that there is not one size fits all incubation programmes but that from her professional experience, the most successful programmes have been private sector driven business incubators.

12.4 Other considerations that came up during the open forum included the crucial role of governments in ensuring enabling policy and regulatory environments. There was also emphasis on effective collaboration-partnership-network-interconnectedness in this era to undertake successful entrepreneurial projects.

12.5 Dr. Ozor asked participants to deliberate on two essential questions and to provide their experiences.

12.5.1 Questions 1:

Discuss one striking principle for establishing a successful enterprise.

In response, participant enumerated the following responses:

> Self programming- planning
> After sale service- follow up – creates a re-enforcement
> Importance of knowing your customer
> Establishing markets and knowing the demand for your products
> The use of ICTs
> Enabling policy environment for enterprise to survive
> Government support through establishment of institutions to facilitate entrepreneurship and enterprises
> The importance of knowing our competitors
> Asking for the sale - as scientist we assume that people should know what we know
> Africa lacks successful (business model) for incubation and entrepreneurship sharing - no successful stories to share in Africa on how to undertake entrepreneurship
> Profitability framework for the execution of the project and aftermath
> Getting to know your customer - as scientist we are driven by publications, however we are driven to promote the applicability of what we research on. Scientists fail to deliver their output results to policy makers. We should have a clear mindset of whom to target - beneficiaries
> Be known as an expert
> Political constraints
> Having a mind to create and innovate
> Business plan
> Establish the viability of the intended business - looking at the cost benefit analysis, competitors and risk analysis
> We need to localize our research into the local context

12.5.2 Question 2

Why are we as scientist unable to establish successful businesses?

Below are responses from participants:

> Because of fear of failure – fear of personal and institutional failures due to lack of open mindedness and a superiority complex (do it right or do nothing)
> We make too many negative assumptions – the environment is hostile to scientists establishing businesses

- The lack of eagerness to go beyond what we researched on as scientists. The temptation to remain in our comfort zones.
- Lack of initiative and drive for business
- Lack of enterprise and business culture
- Poor valuation of business and money
- Ignorance – failure to transform research output into viable enterprises (doing research as a business enterprise)
- Lack of entrepreneurial skills
- Inadequacy of our generic education training
- More practical skills is required

12.6 In her response to comments from participants the Lead Consultant made some remarks concerning why scientists have not been able to successfully enter the business limelight. She stressed on the importance of role modeling which creates the "can do" spirit, as a key ingredient for establishing a successful business. She reiterated that the current education system is too theoretical, often failing to provide the needed practical experience to students. She also observed that Africa has been victim of an education system and culture developed and left behind by the colonial masters – whose primary objective was not to create African entrepreneurs. Lead Consultant also brought up the issue of lack of vision and passion to attain greater heights in business and the failure to foster partnerships for business as limiting the capacity of scientists to establish successful businesses. For example, scientists are generally not good business managers, but partnering up with others in the social sciences will allow them to set up and run successful businesses.

13. Innovation and Entrepreneurship in the Biosciences by Dr. Maurice Bolo of The Scinnovent Centre

The Consultant began his presentation by elucidating the pro- and anti- dichotomy in biotechnology/biosciences. He indicated that bioscience, with its emphasis on biotechnology, is an instrument with positive and negative consequences for society. He took the position that bioscience causes social change but is itself a form of social change and that developments in the biosciences can be tailor-made to fit local contexts. He noted that the world is currently witnessing a transformation beginning by new science and proceeding by way of technology and markets to a new society. He also noted that the success of science has led to radical modifications of social behavior (e.g. Advances in reproductive health have challenged traditional norms). He raised the argument that science and technology appear to be compromising the integrity and uniqueness of human life, e.g. gene sequencing and cloning, and therefore the impact of new technologies are seen as undermining the meaningfulness of industrial-age social constructions.

He observed that the implication for entrepreneurship in biosciences is that the rapid development and application of digital and genetic technologies in a globalizing world shows that we are moving from industrial era to a network era. In this network era, productivity and competition is increasingly determined by the knowledge and information as well as technologies. Therefore networks have thus become the typical current form of productive cooperation. In the networks, the form of cooperation is no longer guided just by the 'entrepreneur' but by the scientist/researcher who creates the products. The scientist's/researcher's role has evolved to include more creation of cooperative links, maintenance of communication channels, exchange, appropriation and injection of

appropriate information into new products. This is to say that scientists/researchers are increasingly being transformed into "Sciento-preneurs".

The Consultant then highlighted certain characteristics that should be possessed by "Sciento-preneurs", which include their ability to:

> build up networks (networking skills)
> accept people and their ideas and to exchange information (socialization skills)
> learn to adapt to different networks (flexibility and adaptability)
> integrate input from different disciplines (multi-disciplinarity)
> become used to mobility and communicate in the language of the target audience beyond the peer community (e.g. policy-makers, markets, users)

The Consultant further outlined three key pillars of bio-entrepreneurship: management, capital, and technology. On management, he noted that no transformation of technology opportunity into product sale can ever occur without skilled managerial capability, and that the skill sets required are wide ranging and evolve with the life of the company. For example:

> at start-up stage: critical skill sets include the ability to direct R&D and communicate the company's promise to the financial community.
> at commercialization stage: manufacturing and commercialization capabilities and collaborations.
> as it approaches the market: marketing and sales agreements have a bearing on profit and loss.
> adapting to the change from a R&D driven to a market driven culture should be managed well.

On capital, he indicated that access to financing, especially long-term financing, is a big challenge to many African companies and that the case for R&D/innovation/science-based companies is likely to be a lot worse due to the inherent risks in innovation (no guarantee for success in the market).

On technology, he observed that the biotechnology industry is anchored on three platform technologies namely: recombinant DNA; monoclonal antibodies and gene-splicing. Most companies still rely on the academia for sources of new technologies. The universities provide fertile grounds for harvesting new inventions and discovery which makes technology licencing/transfer and other forms of IP critical. Therefore, every biotech industry must have a well defined and well articulated product/service focus. He pointed out that to be successful, whether directed towards a technology or disease (or other development challenges), there needs to be a clear vision as the basis for future revenues and the entrepreneur should identify which development challenge the company/technology/innovation will address (i.e. being clear about the opportunity).

The Consultant explained the path to entrepreneurship in life sciences as shown in Figure 1.

The Consultant gave the following tips on building successful enterprises in the biosciences:

> Timing - predicting future changes in society and markets
  - timing can be a real determinant of success
> Take a macro view and predict how the industry or a particular sector will develop and how it will look in 5 – 10 years time
> Aspiring entrepreneurs must never think the market is static - relevant competitors are those in the future
> The competitive space will change down the line and aspiring entrepreneurs must be prepared
> Location - clustering leads to positive externalities and this connotes the saying that birds of the same feathers flock together:
  - Clustering enables companies to be tuned into the industries strategic shifts and become successful together
  - Clustering provides an environment that will attract world-class talent, knowing that if things don't work with one company, there are others nearby
  - Clustering allows mixing of skill sets, and the convergence of many disciplines and cultures

In his concluding remarks, the Consultant shared some thoughts on the challenges of becoming an entrepreneur in this current dispensation. He opined that in the network era, new products and services are the results of social organizations of knowledge networks.

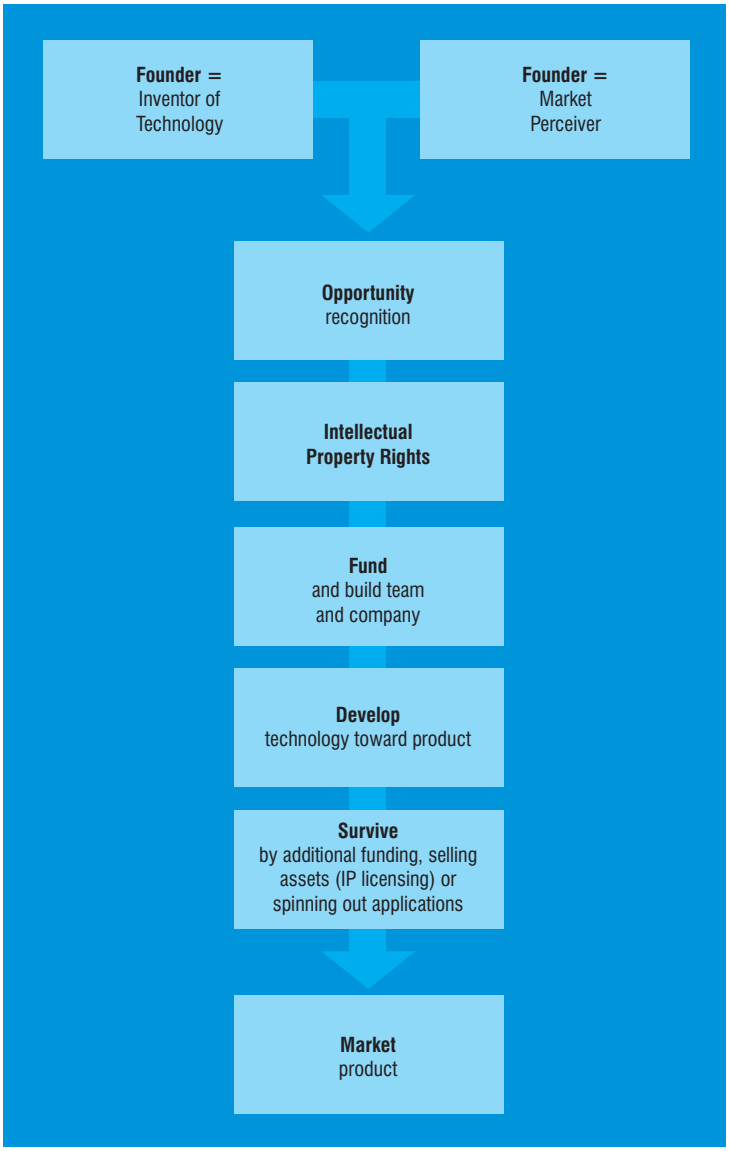

Figure 1: Path to entrepreneurship in life sciences

And that appropriation of such products through patenting and other forms of IPR could be challenged. He further underlined that open source innovation models are opening up and freeing knowledge which other firms could patent, thus changing the innovation landscape. Finally, he posited that there is a shift of power of regulation from the domain of politics to production means and that social and policy organizations are becoming hostile and defensive towards biotechnology.

14. Technology Licensing by Mr. Sylvance A. Sange of the Kenya Industrial Property Institute

The Consultant observed that by the nature of products emerging from technology, it was necessary to put a legal structure in place to regulate transactions, markets and production. He pointed out that Technology Licensing Agreements grant licensees the right to utilize specific technologies, patents, softwares, know-how or product designs. In a typical technology license agreement, a running royalty fee based on licensed product sales revenue is paid to the licensor on a periodic basis. He enumerated some of the benefits of technology licensing as shortening product development time; providing the platform to gain entry into otherwise protected industries; enhance quality of products and processes; contribute to building competitive advantage and expanding existing business capabilities.

He surmised that Technology Transfer Agreements will also usually improve economic efficiency and be pro-competitive as they can reduce duplication of research and development, strengthen the incentive for the initial research and development, spur incremental innovation, facilitate diffusion and generate product market competition. However, licensing agreements may also be used for anti-competitive purposes, such as where two competitors use a licensing agreement to share-out markets between themselves or where an important licence holder excludes competing technologies from the market.


Entrepreneurship Skills Training
under the Bioscience Innovation Policy

15. Intellectual Property by Mr. Sylvance A. Sange of the Kenya Industrial Property Institute

The Consultant made a clear case about the capacity of human beings to have Intellect and will power – the ability to choose freely. This, he said, had everything to do with intellectual property. He defined Intellectual Property (IP) as a term referring to a number of distinct types of creations of the mind for which a set of exclusive rights are recognized under the corresponding fields of law. Intellectual property legislation confers exclusive rights on holders of patents, rights, registered trademarks and other rights protected by the law. He underlined that a holder of intellectual property rights is authorised to prevent any unauthorised use of its intellectual property and to exploit such property, particular by licensing it to third parties.

The Consultant enumerated several reasons why Intellectual Property rights should be protected:

> Protect investments in time, money or other resources used to create new contributions to technology, commerce and entertainment
> Governments encourage creators to disclose their creations to the public in order to promote the progress of science and useful arts which are the engines of development - investors demand this guarantee
> Foster economic growth
> Provide incentives for technological innovations, and
> Attract investments that will create new jobs and career opportunities
> Intellectual property also contributes to the creation of a competitive and transparent market in an economic system where consumers are protected and businesses are able to enter the market freely and to compete fairly
> Intellectual property is also used to develop new businesses (e.g. M-Pesa, a system of transacting money using mobile phones which has contributed massively to job creation in the Kenya

16. Open Forum II

Commenting on how to protect local intellectual property, one participant raised the issue of transformation of the mind of Africans on how we see our local products. He stressed that our inability to place adequate value on our own products and knowledge has rendered them valueless.

A second participant asked multiple questions on IP and licensing of indigenous knowledge (IK):

> How can we protect our indigenous knowledge?
> Can an individual patent indigenous knowledge on behalf of the public?
> When I license my technology to a industry and we agree on royalty payments, whether it is a service or product, how do I know that at the end of the period, what we actually agreed on is the true reflection of the unit that have been sold?
> What are key indicators to look for in an enterprise to determine whether to license a technology to an industry?
> At the point of registering my intellectual property, do I have to sign a non-disclosure agreement (NDA) with the hired lawyer who is assisting in the patenting of my idea or product?
> Since the patenting process takes time, is there a provisional process to get my intellectual property protected whilst applying the knowledge or product?

In his response, the Consultant pointed out that we Africans have very little ideas on protecting our indigenous knowledge. On royalties, IP being intangible, it is very hard to deal with and therefore there is a need for legal assistance. Being intangible by nature, the presence of rules and regulations define the existence of IP.

Knowing how much you gain from your IP agreement is made through a provision in the Technology Licensing Agreement, where an agreement is made to keep record of account of how much of the technology or product is produced and how much is earned. IP value is the

present value of the future economic benefits of ownership. On the issue of NDA, a part of a lawyer's mandate is to keep sacred and secret the information of a client and therefore it is not much of an issue, but it is also important (for all concerned) not to reveal certain sensitive aspects deemed crucial, just in case things do not go as expected with the agreement.

17. Feedback from Participants

On the whole, participants ranked the training and its organization as excellent (Fig. 1). They expressed deep satisfaction with how insightful and informative this training was to them. However, participants expressed concern about the short period of both the training and the time allocation for each activity (Fig. 2). They recommended that future similar training workshops should last for more than two days to enable effective delivery of information within the period and to avoid information overload.

On the content of the training, participant indicated that all aspects of the training were very useful but they were very much excited about two key topics which were entrepreneurship and small business establishment. They were of the view that scientists have shown weak capacity to initiate a business agenda for their innovative products. Therefore, this training has come at an appropriate time to equip them with the much needed entrepreneurial skills and knowledge to venture into the business world with their innovative research ideas and other outputs. However, they recommended that practical examples of entrepreneurship successes from the bio-sciences such as case studies from the region would have given more meaning to the training.

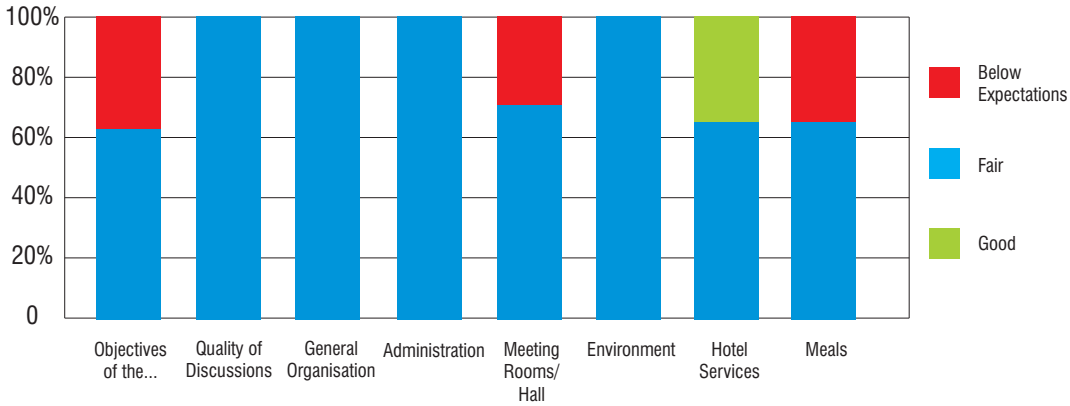

Figure 2: Response from participant on training content

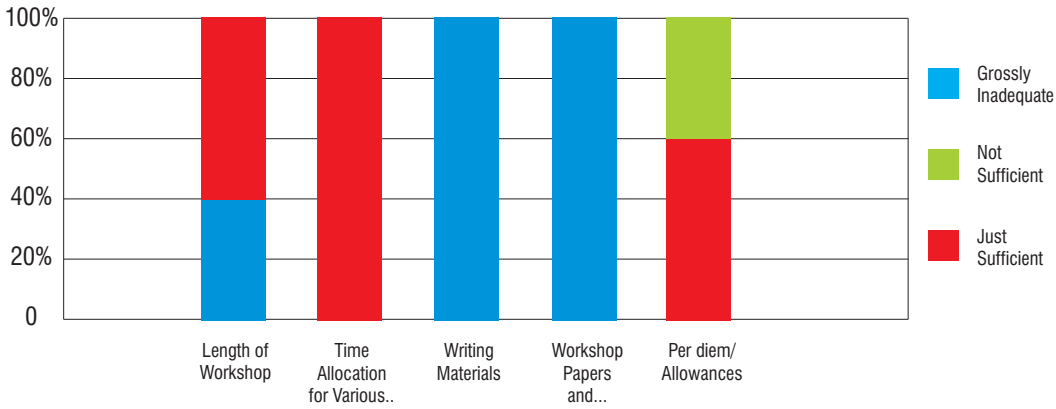

Figure 3: Response from participant on training modalities

18. Closing Remarks

In conclusion, Dr. Nicholas Ozor, who is the Coordinator of the BIPCEA project at the ATPS thanked delegates for participating in the training and urged them to apply what they had learnt during the workshop in order to make the needed developmental impact on their respective countries. He then thanked the Lead Consultant, Prof. Ndede-Amadi, and her team for facilitating the training programme and for the in-depth and constructive information provided to participants.

ANNEXES

Annex 1: Workshop programme

Day 1, Thursday 3rd May 2012		Rapporteur: Mr. Ernest Acheampong, ATPS Research Officer	
No.	**Time**	**Activity**	**Facilitator**
1	**8:00am – 8:30am**	Arrival & Registration	ATPS Secretariat
2	8:30am – 9:00am	Welcoming Remarks	Prof. Kevin Urama, Executive Director, ATPS
3	9:00am – 9:30am	Introductions & Leveling of Expectations	Dr. Nicholas Ozor, ATPS Senior Researcher
4	9:30am – 10:30am	Entrepreneurship in Economic Development	Lead Consultant
	10:30am – 11:00am	Health Break	ATPS Secretariat
5	11:00am – 11:30am	Entrepreneurship in Bio-Sciences	Co-Consultant I
6	11:30am – 12:30pm	Establishing an enterprise	Lead Consultant
7	12:30pm – 01:00pm	Open Forum / Discussions	Dr. Nicholas Ozor, ATPS Senior Researcher
	01:00pm – 02:00pm	LUNCH	ATPS Secretariat
8	02:00pm – 03:00pm	Identifying innovations for commercialization	Lead Consultant
9	03:00pm – 04:00pm	Managing a small business	Lead Consultant
10	04:00pm – 04:30pm	Open Forum / Discussions	Dr. Nicholas Ozor, ATPS Senior Researcher
	04:30pm – 05:30pm	Health Break / Departure	ATPS Secretariat

Day 2, Friday 4th May 2012		Rapporteur: Mr. Ernest Acheampong, ATPS Research Officer	
No.	**Time**	**Activity**	**Facilitator**
1	8:00am – 8:30am	Arrival & Registration	ATPS Secretariat
2	8:30am – 9:00am	Recap of Day 1	Mr. Ernest Acheampong, ATPS Research Officer
3	9:00am – 9:30am	From Feasibility Plan to Business Plan	Lead Consultant
4	9:30am – 10:30am	Feasibility Study	Lead Consultant
	10:30am – 11:00am	Health Break	ATPS Secretariat
5	11:00pm – 12:30pm	Business Plan	Lead Consultant
6	12:30pm – 01:00pm	Open Forum / Discussions	Dr. Nicholas Ozor, ATPS Senior Researcher
	01:00pm – 02:00pm	LUNCH	ATPS Secretariat
7	02:00pm – 02:45pm	Ethics in running a small business	Lead Consultant
8	02:45pm – 03:30pm	Technology Licensing	Co-Consultant II
9	03:30pm – 04:15pm	Intellectual Property	Co-Consultant III
10	04:15pm – 04:45pm	Open Forum / Discussions	Dr. Nicholas Ozor, ATPS Senior

Annex 2: Participant's list

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