

University Education in Promoting Sustainable Agriculture and Economic Development

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Outline

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Overview

- Sub-Saharan Africa's economic growth depends on the development and promotion of a vibrant and sustainable agricultural production base
- The prime movers for sustainable agriculture and community development include availability of improved technologies, human capital, sustainable growth of biological and physical capital, improvement in performance of supporting institutions and favourable economic policy environment.

Overview contd

- Central to making these components operational is the production of suitable graduates who are i) technologically competent and relevant, ii) equipped with the necessary “soft skills” and business skills and iii) able to work with local and especially rural communities.
- Livelihood situation in Africa has been described as dire and deteriorating

Concept1: Development

- A system of change over time impacting the lives of people living within a given system

Concept2: Sustainable Development

- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Bruntland Commission, 1987).

Concept 3: Sustainable Agriculture

- *"Major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as developing countries, to create the conditions for sustainable agriculture and rural development. The major objective of sustainable agriculture and rural development is to increase food production in a sustainable way and enhance food security. This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection. (Agenda 21 1992,) , World Commission on Environment and Development*

Sustainable Agriculture contd

- Definitions of sustainable agriculture are generally concerned with the **need for agricultural practices to be economically viable, to meet human needs for food, to be environmentally positive, and to be concerned with quality of life.**

Sustainable Agric. contd

- Sustainable agriculture is thought of in terms of its adaptability and flexibility over time to respond to the demands for food and fiber (both high and low), its demands on natural resources for production, and its ability to protect the soil and the resources

Sustainable Agric. contd

- Finally, because agriculture is affected by changes in market and resource decisions in other sectors and regions, it is important that these changes do not provide a rationale for depleting the agricultural resource base locally

Basis for Sust. Agric

- basis of sustainable agriculture lies in the need for farmers to work in harmony with the entire ecological environment
- The idea behind this kind of agriculture is to leave the smallest amount of damage to the environment, and only use the resources that are absolutely necessary to sustain a given area

Concept 4: Education

- Is a process of inducing new skills and expertise using appropriate pedagogic approaches to a trainee in order for him/her to become employable in the labour market

Role of Education

- The vision for university education will be to develop a conceptual program utilizing current technology to spark and further promote the development of exciting and innovative models in sustainable agriculture targeting the younger generation leaders

Role of education contd

- The impact of education on the youth should be extensive; it not only gives them the tools necessary to lead a purpose-driven life, it also gives them a deep-rooted hope for the future, which can be passed down through generations. Higher education systems lead to higher social, economic and environmental standards of living

Role of Technology in education

- In 1436 Johann Gutenberg changed the world with the invention of the Gutenberg Press. The press created the ability to mass produce print and promote widespread transfer of information
- Tim Berners-Lee created the World Wide Web in 1990 which forever changed the way information was passed. Lee decided the internet should be available to anyone and did not charge for its use

Technology and education

- Because of their lack of resources and education, developing countries are utilizing less environmentally sustainable practices
- Unlike developed countries whose primary focus is turning a profit which leads to overuse of land and crucial natural resources like water, developing countries view agricultural practices as a means of survival

Technology & education contd

- The new university education for Cameroon should in turn address this gap
- Thus, environmentally safe methods of farming are not at the forefront; we are not using enough of our resources to feed our own people at effective rates.
- What we need are education programs that educate farmers about the importance and long term-benefits of sustainable farming practices eg Agro-forestry.
- These benefits include the conservation of land, water, and other organic fertilizers

Sustainable Agric & Global Warming

- Major causes include deforestation, carbon emissions, methane from manure, etc
- Sustainable agriculture is seen as one of the solutions to global warming and an affordable technology to resource poor farmers

Concept 5: Entrepreneurship

- The ability to craft out ideas into realistic and long term business solutions and/or either set up employable structures or consultancy firms

Innovative University Education System

- Throughout the world, basic and applied research, technological development and diffusion models are led by innovative universities.
- Innovative university education systems are those that are at the cutting-edge of research, technological innovations and diffusion systems
- We look forward at the African University Foundation to develop and implant right from the conceptual stages, complete features of innovative university education systems.

University Education System and Innovative Sustainable Development Model

- University education trains creative and technology-driven teachers, professionals and future leaders
- Through research, university education helps to find solutions to social and technical problems
- Having expertise in many areas, university education can adopt a multi-disciplinary approach
- Through the outreach service, university education can reach out to vulnerable sections of society

How Can University Education Promote Sustainable Development?

- Practical curriculum development
- New pedagogic approaches
- Appropriate teacher training
- Postgraduate/Professional continuing education program
- Participatory Action Research (Demand-driven Research)
- Community engagement and outreach

Prime Movers to Sustainable Agricultural and Community Development

- New technology produced by public and private investments in agricultural research or imported from the global research system (CGIAR).
- Human capital in the form of professional, managerial and technical skills produced by the university education system is necessary to achieve this.
- Sustained growth of biological capital (crops, genetics, livestock, forests, etc) and physical capital (post harvest technology, irrigation, roads, etc)

Prime Movers contd

- Favourable economic policy environment
- Improvement in performance of institutions such as marketing, credit, research, extension, etc
- No single prime mover can increase agricultural production and sustain it for any period of time.
However, central to making the prime movers operational is the production of the necessary human resources to man the different institutions which will “get agriculture moving”.

Case Study of Innovative Model Development in University Education

- **Prime engines for economic growth:** Higher education, technology and entrepreneurship
- It has been demonstrated that appropriate investments in higher education, technology and entrepreneurship in poor regions in developing countries have led to a more diverse rural economy, contribute to community development, induce social change and created more economic opportunities
- Such long term investments in human capital have led to these regions in becoming more effective in managing their own resources and at the same time improve their capacity to integrate into the global market economy

Innovative model development contd

- It has been observed that from 2000 to 2005, that only those countries with strong endogenous economic growth are likely to achieve the UN Millenium Development Goals (MDGs) (WTI Brunch Seminar Report, 2005).
- The main engines of endogenous economic growth include higher education, technology and entrepreneurship
- These variables are the prime requisites for developing a sustainable agriculture and community development initiatives in any community. The university education system must work as engines of economic growth and sustainable development.

Innovative Model Development contd

- Cameroonian universities need to provide more than formal education if they are to mobilize human capital for development
- They need to invest in life-long education programs, practical and technical training courses and the coaching of entrepreneurs. The coaching of entrepreneurs requires universities to become more engaged with the business community, civil society and government agencies that can facilitate entrepreneurship.
- Researchers in universities should be capable of setting up their own companies towards contributing to local endogenous development

Innovative model development contd

- Examples of entrepreneurial universities exist across the globe such as the EARTH University in Costal Rica, the Botswana College of Agriculture and ERuDeF's Institute of Biodiversity and Non-profit Studies program

Entrepreneurial University¹: The EARTH University Model

- The EARTH University educational model is based on four pillars namely social commitment, environmental awareness, entrepreneurial mentality and the development of human values
- The overall goal is to generate knowledge through an innovative spirit
- In this context, the university acts as a catalyst for the development of new ideas and projects that incorporate the elements of sustainability

The EARTH University Model contd

- Students at EARTH University are not just for receiving formal education but are at the same time prepared to become entrepreneurs that contribute to future community development
- It offers a 4 year student-centred integrated learning program. Emphasis is placed on team work, intercultural exchange, leadership and values
- The admission process at EARTH seeks to locate candidates from rural areas who possess an agricultural vocation, social and environmental awareness and concern and a commitment to return to their region of origin

The EARTH University Model contd

- The EARTH study plan emphasizes processes and integration, with relatively less importance given to classes organized strictly along disciplinary lines
- There are no departments at the University and Faculty are organized by the year they teach as opposed to disciplinary lines
- The entrepreneurial focus of the study program begins in the first year of study. Students study and apply business skills as they develop enterprises.

The EARTH University Model contd

- EARTH has established a loan fund to provide start-up capital for graduates.
- As of 2007, 1082 students have graduated. 68% went into the private sector, 9% work with NGOs, 10% entered the public sector, 5% are in postgraduate courses, 3% are seeking employment and 5% has no information (Sherrard, 2003)

The Botswana College of Agriculture (BCA)/Supervised Enterprise Project

- The main objective of Supervised Enterprise Project (SEP) is to equip agricultural graduates with entrepreneurial skills that make them better prepared for employment in the private sector or self employment
- The SEP program at BCA enables students to undertake chosen small-scale agricultural enterprises at BCA over a period of 10 months. The main objectives are to:
- Train students in the management of chosen agricultural enterprises in order to make them technically competent in agro-business

Botswana College contd

- Equip students with financial and business management skills and provide them with practical experiences in issues related to credit, loan repayment and record keeping
- Enable students to accumulate capital (from profits earned from the SEP enterprises) for use as collateral later after they have completed the program

Botswana College contd

- The BCA extends a loan of US\$1000 (= 5 million CFA) to a student wishing to embark on a chosen agricultural enterprise.
- Students wishing to join SEP program are required to develop and submit project proposals and budgets that show the chosen enterprises and the projected costs and returns.

Botswana College contd

- The SEP loans are charged an economic interest rate and repayments of these loans start as soon as the first sales have been made.
- The students are also charged BCA rates for the use of any services or facilities offered by the college.
- On completion, the students take home any remaining profits after the sale of their commodities
- Under this program, graduates are equipped with entrepreneurial skills that make them better prepared for employment by the private sector or for self employment

ERuDeF/Institute of Biodiversity and Non-profit Studies/IBiNS Program

- program designed to provide practical training, creative and strategic thinking to Cameroonian students and recent graduates
- These are the most needed ingredients and conversion factors for them to pick up and/or set up their own enterprises
- Its 12-month biodiversity studies project provides hands-on experiences on issues related to scientific research and conservation.

ERuDeF/Institute of Biodiversity and Non-profit Studies/IBiNS Program

- Its 9-month non-profit studies project provides the trainees of learning how to conceive, set up and run an NGO
- ERuDeF has also launched a 2-4 week international field course on biodiversity conservation and great apes tracking
- This course is aimed at those with very little or no experience in conservation but who wish to take up careers in this field.
- In this model, ERuDeF is providing half the course of the program

ERuDeF/Forest Protection Fund

- ERuDeF has also launched the Forest Protection Fund initiative
- This is a locally designed trust fund aimed at reconciling biodiversity conservation with poverty alleviation
- It has a joint management procedure (communities and ERuDeF).
- 60% of the funding is provided by ERuDeF and 40% by the communities.
- ERuDeF builds the technical capacity of local communities, provides monitoring and mentoring as well as assist in the preparation of the community business plans

Way Forward for the African University Tali

- Graduates should have strong entrepreneurial skills and spirit and are capable of initiating new job opportunities
- Graduates are guided by positive values and high ethical standards; are committed to a new vision of agricultural production compatible with the natural environment and the conservation of biodiversity.
- Graduates have a solid grounding in the scientific and technical principles that underlie practice as well as the practical experience critical to developing confidence coupled with a generalist preparation that will enable them to develop holistic solutions to the problems that they will encounter in their careers.

Way Forward for the African University Tali

- Graduates are innovators with the confidence to be creative and address real problems are life-long learners
- Graduates should possess strong leadership, interpersonal and team-building skills and demonstrate strong communication skills, including effective use of international business languages and information technology

Challenges to Promoting Sustainable Agricultural Development in University

Education in Cameroon

- Adapt to the university education system (BMP on going in Cameroon)
- Severe shortage of well qualified faculty
- Conceive departmental academic structures to promote sustainable agricultural and community development

Challenges contd

- Faculty be ready to apply multi-disciplinary approach
- Faculty teach by providing hands-on experience in problem-solving, systems-based approach
- Develop a very proactive research and community engagement (outreach)
- Introduce innovative business models in the university education system

Conclusion

- The future of the world lies in the hands of the next generation and thereafter.
- “Any nation's most precious natural resource is its children...the emerging world must leverage this resource (technology) by tapping into the children's innate capacities to learn, share, and create on their own” (OLPC, 2008).
- Evidence shown by Johnson and Hazell (2002) and Rosegrant et al (2005) and Diao et al (2006) suggest that Africa's growth hinges on the growth small holder agriculture.
- Agriculture will continue to be the driver for economic growth in Sub-Saharan Africa for the foreseeable future.

Conclusion contd

- University education system therefore needs to produce appropriate graduates that will play their role in contributing to the development of the small holder agricultural sector.
- In order to get agriculture moving in Cameroon, a trained cadre who is technologically competent and relevant; equipped with necessary “soft skills” and business skills to generate employment and wealth and able to work particularly with rural communities should be produced.
- In this way, university education role will be to attract best faculty, have appropriate curricula content and education delivery systems and rural community driven.

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