

Assessing Food and Nutrition Training in Burkina Faso Using the “Auditing Instrument for Food Security in Higher education (AIFSHE)”

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Abstract In Sub-Saharan Africa the food supply, determined by the performance of a largely subsistence and poorly structured agriculture, remains dependent on the climatic conditions. In such situation, the training on food and nutrition and the need of curricula review processes in agricultural higher education is an important issue. The present study aimed to assess the embodiment of the concept of food security in the agricultural department of the NAZI BONI University. The department was audited using the AIFSHE tool, and a total of fifty persons attended the audit. A survey was also carried out at university and research levels where three hundred and twenty eight persons responded, and a focus group discussion was done during a workshop where a total of one hundred and fifteen stakeholders participated. The results of the audit showed good results, about the network of the university and the educational methods and pedagogy. However, the vision and strategy for food security in the country are implicit and not well defined in the university documents. The surveys reported that the curricula and research topics contained very few aspects of food security. The workshop proposed that students should be allowed in the design of food security curricula and that the food security mission at university level should be clearly defined in an integrated coordinated manner by involving many ministries, to ensure a well-balanced approach to its dimensions. With respect to research, it was highlighted that the university could focus its research activities in the area of agricultural extension in order to contribute to improving food consumption at household level and the population welfare, with the best utilisation of national funding. The findings of the study imply that agricultural higher education has a key role to play to contribute to the achievement of food and nutrition security in the country, and therefore, policy makers should give opportunities and facilities to these institutions.

Keywords: *higher education, Burkina Faso, AIFSHE*

Cite This Article: Salimata Pousga, Olivier Bello, Judith Ann Francis, and Hamidou Boly, “Assessing Food and Nutrition Training in Burkina Faso Using the ‘Auditing Instrument for Food Security in Higher education (AIFSHE)’.” *Journal of Food Security*, vol. 6, no. 2 (2018): 67-73. doi: 10.12691/jfs-6-2-3.

1. Introduction

In Sub-Saharan Africa, the complexity of urban, peri-urban and the rural areas coupled with the scourge of food and nutrition insecurity requires more agriculture and food policy consideration [1].

The food supply, determined by the performance of a largely subsistence and poorly structured agriculture, remains dependent on the climatic conditions, which makes it unstable with periods of abundance alternating with periods of shortages. In such situation, the training on food and nutrition and the need of curricula review processes in agricultural higher education is an important issue.

Several regional policy frameworks have been launched in Africa to improve agricultural performance as well as the food and nutrition situation. Despite this, the food

insecurity picture remains particularly bleak especially in sub-Saharan Africa, and, hunger and under-nutrition remain a major cause of concern. The food and nutritional situation in Burkina Faso is characterized by chronic under-nutrition, the concrete manifestations of which are a high endemicity of acute and chronic malnutrition as well as the high prevalence of some specific nutritional deficiencies, in particular iron, iodine and A vitamin [2]. In addition, these acute and chronic malnutrition affect respectively 19% and 39% of children under 5 years of age, while 21% of women who can give birth are in a state of chronic energy deficiency with a direct consequence that 18% of children born with low body weight [3]. Burkina Faso is gradually emerging from a difficult food situation caused by the 2011 drought that affected 3.5 million people and forced the government to declare a national emergency in 2012 [2]. At the continental level in Africa, the Comprehensive African Agricultural Development Programme (CAADP) of the New Partnership for Africa’s

Development (NEPAD) Agency of the African Union provided a vision and a policy framework for addressing the enormous challenges facing African agriculture [4]. However, the fact that food security policies in Africa in general and in Burkina Faso in particular tend to focus on agricultural production obscuring other sectors has been claimed [5,6,7]. In Burkina Faso, food security governance is not mobilizing all public stakeholders as the universities and other tertiary education institutions dealing with agricultural issues are not often involved in food policy discussions. However, the Technical Centre for Agricultural and Rural Cooperation (CTA) in its science, technology and innovation programme for ACP (African, Caribbean and Pacific) countries, promoted the concept that a strategic food and nutrition policy based should also involve universities and other tertiary education institutes who are being called upon to move beyond training and the pursuit of knowledge, and become more strategic assets with strong forward and backward linkages to the policy and productive sectors, in order to expand their reach and increase their impact at community and national level.

The present study is an essential component of this framework, and the general objective is to help the universities to enhance their contribution to the attainment of food and nutrition security in the country. More specifically the study focused on auditing the main national agricultural tertiary institution in order to assess to what extent food security concepts are implicated in education and research, using a tool, the Auditing Instrument for Food Security in Higher Education (AIFSHE) [8]. In addition, surveys and a focus group discussion were carried out at university and stakeholder's level, to gather perceptions on the strategic plan that might be suitable for the universities to contribute to achieving food and nutrition security in Burkina Faso.

2. Materials and Methods

2.1. Materials

2.1.1. Location of the Study

The study was carried out in Ouagadougou the capital of the country, and in Bobo-Dioulasso, the second town of the country, where the NAZI BONI University is located. The audit and the focus group discussion took place in Ouagadougou for practical reasons, in order to involve lecturers from different disciplines as well as a variety of students, and many universities collaborators. The survey questionnaires were addressed to lecturers, staff and students from NAZI BONI University, and also from a national institute dealing with higher education in agriculture that is the "Centre Agricole Polyvalent de Matroukou". The study was also conducted throughout the country with the questionnaires being addressed to workers and researchers from the national institute for agricultural research (INERA) and the International Center for Animal Research in Sub-humid zone (CIRDES) who are also involved in the training and research as collaborators, and also to others stakeholders or end users (public sector, policy makers, private sector, NGO and farmers associations).

2.1.2. The Group Audited

A total of 50 people participated in the audit according to the recommendations of the auditor. Representative samples of people from the following groups were audited: Academia (lecturers, students, staff)
Stakeholders /end users (public and private sector).

2.1.3. The Institutions Targeted for the Survey and the Focus Group Discussion

Universities and research centers (NAZI BONI University, Centre Agricole Polyvalent de Matroukou, International Center for Animal Research in Sub-humid zone (CIRDES), National Institute for Agronomic Research (INERA))

Stakeholders / end users (Ministry of Agriculture and Food Security (MASA), Ministry of Animal Resources (MRA), Ministry of the Environment and Sustainable Development (MEDD), Ministry of Health, National Union of Cotton Producers of Burkina (UNPCB), SNV (NGO from The Netherland) and OXFAM).

Table 1. Summary of the variables used during the surveys and the focus discussion

What is food security?
What is the food security situation of Burkina Faso?
Which of the following best describes your current occupation?
What disciplinary background best describes you?
Which category below includes your age? 18-29; 30-39; 40-49; 50-59; 60-over
What is your gender?
Below you will find a list of current issues. Can you rank them in order of importance as you perceive it? (1 = most important, 9 = least important): HIV- Human right -Food security- Gender equality- Climate change- Ethnic war-poverty alleviation- water issues
Below you will find a few statements. Please indicate to what extend you agree or disagree with the statement: <ul style="list-style-type: none"> The issue of focusing on food security should encompass the whole curriculum of the university Students should play a role in the renewing of the curriculum External parties (including the private sector) should play a role in renewing the curriculum In our situation it is unrealistic to have students play a role in renewing the curriculum My university has been engaged in setting and influencing national and regional food security policies In our situation it is unrealistic to have external parties (including the private sector) play a role in renewing the curriculum Food security important but so are many other issues and we cannot privilege this topic over the others. There is a clear mandate from the top level management of the university in giving food security more prominence in the university's CURRICULUM. There is a clear mandate from the top level management of the university in giving food security more prominence in the university's RESEARCH There is a clear mandate from the top level management for university staff to be engaged in implementation of ARD policies and programmes e.g. CAADP agenda in Africa
What do you see as key OPPORTUNITIES for giving the issue of food security more prominence in higher agricultural education?
What do you see as key THREATS for giving the issue of food security more prominence in higher agricultural education?

2.2. Methods

2.2.1. The Audit

The Auditing Instrument for Food Security in Higher Education (AIFSHE) [8] was used as auditing tool to assess food and nutrition security components at the university level. The following criteria considered were:

- Vision
- Strategy
- Communication
- Expertise
- Expert group
- Educative Objectives
- Educative contents.

2.2.2. The Surveys

Three questionnaires were used during the survey, representing each category of the respondent (education and research institutes; Students; others stakeholders). The questionnaires were basically similar, and the main objective was to gather informations on the perceptions on food and nutrition security as well as the role of the universities. A total of 328 people responded to the survey.

2.2.3. The Focus Group Discussion

This focus group was done in a workshop setting involving the representative of the target institution as participants. A total of 115 people attended the workshop.

2.2.4. Statistical Analysis

Data from the survey were analysed and frequencies calculated using Epi Info Software. The graphs were done using Microsoft Excel.

3. Results

3.1. Descriptive Analysis of the Respondent

The characteristics of the respondents are assigned in the table below:

Table 2. Characteristics of the respondents

Respondents	Audit (N= 50)	Survey (N= 328)	Focus group discussion (N= 115)
Age (years)			
18-29	3%	5%	2%
30-39	2%	20%	28%
40-49	40%	70%	67%
50-59	55%	5%	3%
Gender			
• Male	96.6%	91.5%	73.8%
• Female	3.4%	8.5%	26.2%
Academia (%)			
Lecturers/Researcher /staffs	80%	33%	92%
Students	18%	65%	5%
End users (Stakeholders) (%)	2%	2%	3%

3.2. The Audit

The results of the audit are presented in [Figure 1](#) which shows the present and the desired situation of food and nutrition security topics in the training at the faculty of rural development in NAZI BONI University).

Vision (Level 1)

All participants agreed that the management of the Department had a vision with regards to food security, but this vision was found to be implicit. As such, the vision was not stated expressly in the department's mission statement. However, the management offered its staff opportunities and facilities to work towards this vision of food security.

Strategy (Level 1)

The strategy implemented by IDR management to achieve food security was a top-down approach, but this was largely implicit. Collaboration with certain NGOs was clearly defined on the basis of achieving the food security vision. This vision was clear in the context of classical training, in which the target for food security was often stated in terms of quantitative and qualitative production.

Communication (Level 0)

Communication on food security within the Institute remained at the embryonic stage. However, it should be noted that at IDR, efforts were being made to strengthen the focus on food security, and that the research activities of some teachers in the Institute were focused on food security. These activities were subject to reports that were regularly made available to the IDR management.

Expertise (level 2)

IDR participants were unanimous that some lecturers and staffs maintained contact with companies and/or centre of expertise in the professional field, and thus enhanced their knowledge and experience in food security. But it should be noted that not all aspects of food security were covered by these contacts. However, the group supported the fact that each teacher should, in some way, be an expert in food security.

Expert group (Level 1)

Teachers were active in the field of food security. The unit that provided in service training supported teachers in this direction over a period of time. Today, however the unit was out of work due to a lack of finance.

Educative objectives

Profile of the graduate (Level 2)

Graduates and teachers were heavily involved in developing the training programme and some aspects of food security were integrated.

Educational methodology (Level 3)

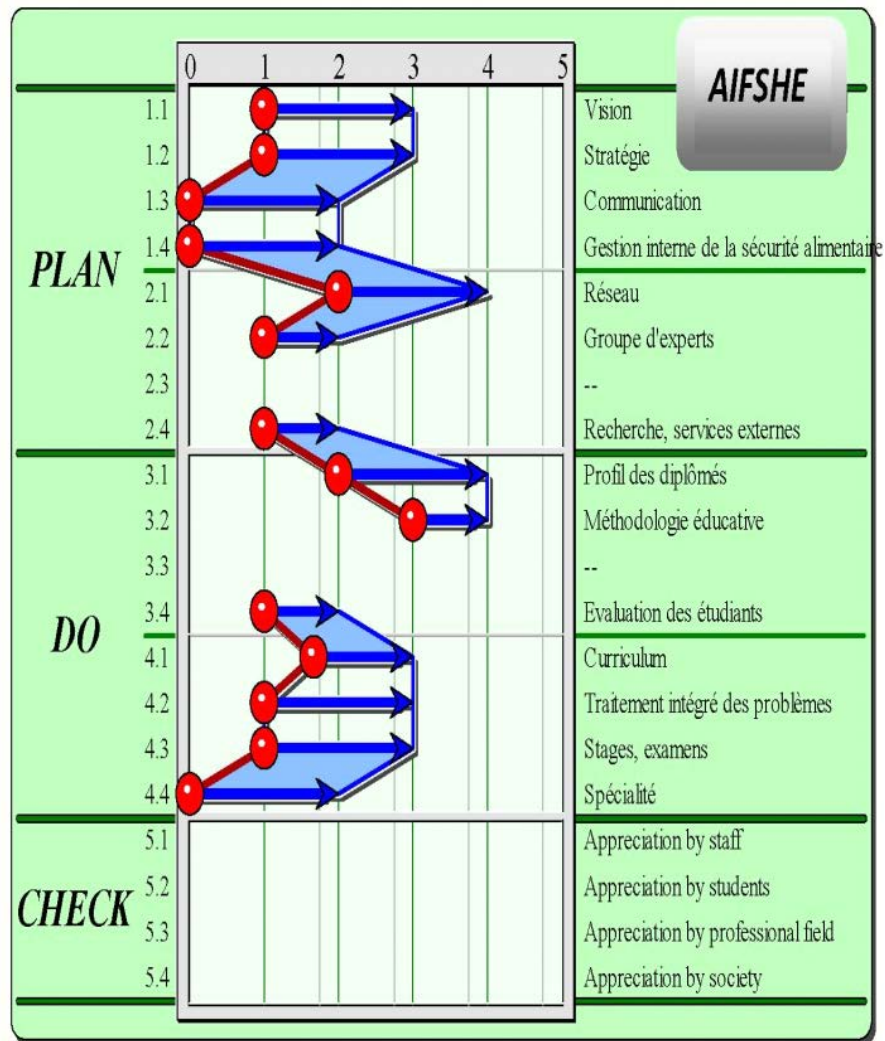
The group noted that students had the opportunity to develop personal reflections during their education, particularly through practical activities during field studies.

Integrated problem handling (Level 1)

Personal initiatives were taken by teachers and helped attract attention to food security

Speciality (Level 0)

The current level of training did not allow students to choose an optional module related to food security.



Level 1: Activity oriented, Level 2: Process oriented, Level 3: System oriented, Level 4: Chain oriented, Level 5: Society oriented
 Present situations: red spots
 Desired situations: end of blue arrows

Figure 1. Present and desired situations of food and nutrition security topics in the training

3.3. Survey and Focus Group Discussions

3.3.1. Evaluation of the “food and nutrition security” Concept at Higher Education and Research Institutes Level in Burkina Faso

For the majority of these communities, food security consisted of having enough food (68.5, 53.8 and 84.5%, respectively, for the workers, the students and the stakeholder’s perceptions), not necessarily safe or good quality food. The situation of food and nutrition security in Burkina Faso was found to be very bad for each of the three groups. The seriousness of the situation was highly indicated by stakeholder’s group (Figure 2).

3.3.2. Existence of Any Roles for the Universities in the Food and Nutrition Security Policies

The survey showed that the visibility of the terms “food and nutrition security” was not very much highlighted in the university documents, but the majority of the groups surveyed (about 90 % in all groups) believed that the universities had a key role to play in the food and nutrition policies if the country had to achieve food and nutrition security (Figure 3). Thirty percent (30%) of the group

considered that the term food and nutrition security appeared in both the university strategic plans, the course chapters and title, and in the research topics (Figure 4).

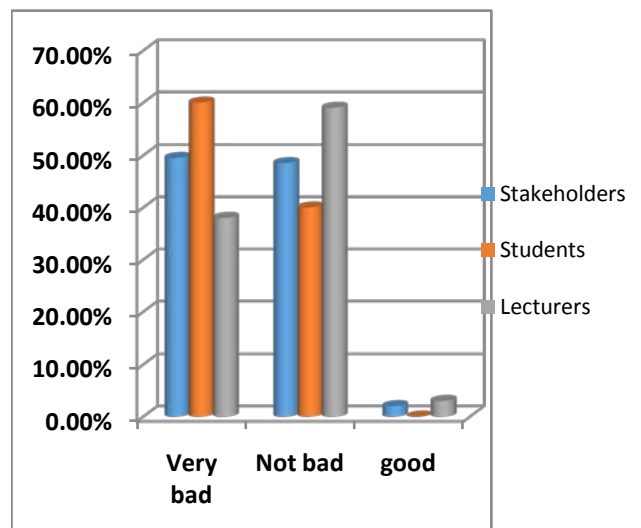


Figure 2. State of food and nutrition security in Burkina Faso

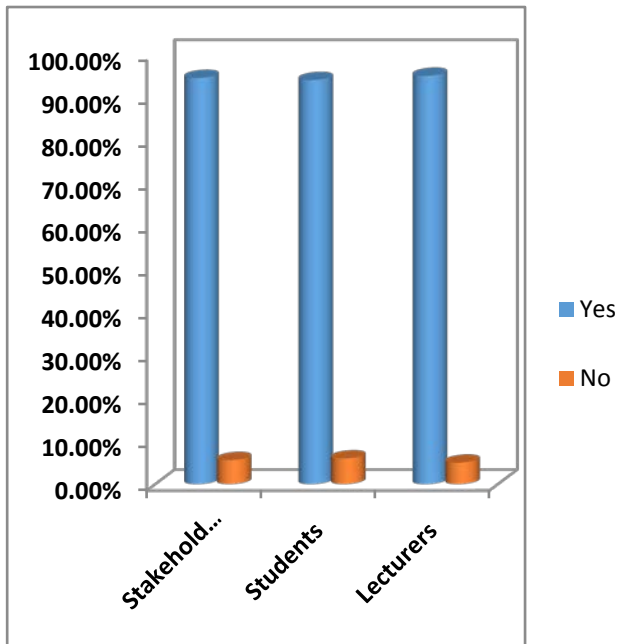


Figure 3. Existence of any role at university level for the country to achieve food security

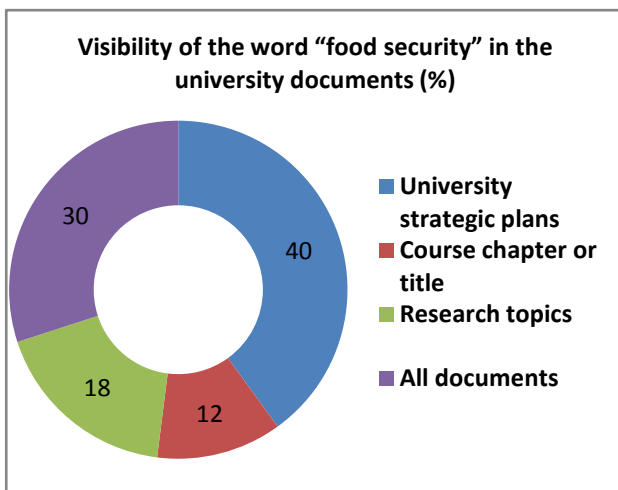


Figure 4. Visibility of the word "food security" in the university documents

3.3.3. Roles of the Universities

Research re-orientation

According to the survey, the main vision at university level was to contribute to improve food consumption and the population welfare, and this could be achieved through the following requirements: The first requirement was that the universities needed to increase research activities in agricultural extension on food security, on the importance of food safety and food quality (about 71.2%). Secondly, the universities could use some local funding to support research in agricultural extension (18.4%), and lastly the combination of the two above requirements (10.3%)

Curriculum development

The focus groups discussion recommended the creation of either an agricultural institute or a faculty with a specific training on food security. Both the ministry of agriculture and food security and the ministry of higher education and scientific research could be responsible of this future institute, and the concept of food security

should be clearly defined in the mission of this agricultural institute or faculty.

In addition, the group recommended the establishment of a degree on food security and the options of this degree could include the four pillars of CAADP. The discussion also highlighted the necessity to involve stakeholders in curricula development and to introduce module on food security in other technical trainings. It was also suggested that research topics should consider food security aspects.

Strategies of actors needed for a re-orientation towards ARD policy processes in Burkina Faso

It was suggested to establish a coordination mechanism between policy makers (Ministry of agriculture and food security, Ministry of higher education scientific research and technologic innovation, Ministry of animal resources, Ministry of environment, Ministry of health), and this could be implemented through the creation of business incubators. Finally, the necessity that development policies should be coherent was mentioned.

4. Discussion

4.1. Evaluation of Food and Nutrition Security Topics in the Training at the Department of Rural Development in NAZI BONI University

The general perception found on food security in this study was that it consisted of having enough, not necessarily safe or good quality food. The perception fitted inside the food security basket of FAO, IFAD, and WFP where food security was addressed by the proportion of undernourished people in a country [9]. However, the prevailing understanding adopted by major international organizations was that food security prevailed 'when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life' [10,11]. It had then been argued that sustainability, in addition to the concepts of availability, accessibility and utilization, should also be explicitly included as a pillar of food security [12], particularly in fragile environments such as the Sahel region.

The situation of food and nutrition was found to be very bad and the seriousness was highly indicated by stockholder's group, probably due to the fact that stakeholders live or work outside the cities or in rural area, where most of the people are under nourished [13].

4.2. Role of the NAZI BONI University in Food and Nutrition Security Policies

4.2.1. University Strategic Plans

The visibility of the terms "food and nutrition security" was not very much highlighted in the university strategy document according to the audit and the survey. The department needed a mission statement at the institutional level which could explicitly include food security training programmes, and, the University Scientific Council should review IDR training programmes in order to explicitly introduce training in food security. This institutional concern of food and nutrition security in Burkina Faso had been addressed by another author [7].

Making the strategy for food security explicit would allow a move onto phase three in the AIFSHE (Auditing Instrument for Food Security in Higher Education) tool, where staff will actively participate in the process of developing an integrated food security policy, analyzing major development factors as indicated by author [14]. In general at university level, strategic plans are linked to short-term developments and therefore, it is important that the universities make explicit decisions in the development process related to food security strategies, and these decisions must be validated by the Scientific Council of each institution.

In terms of the vision a working group was preferred, given the fact that “Food security” words were now seen in the name of some ministry. However, concerns remained about the actual implementation of the strategy, particularly due to the low financial aid granted to the universities for their operations.

In term of expertise, the university must work to develop regular exchanges between lecturers, secondary schools and food security professionals. For example, in the context of field work in which the role of food security was being explained, practical activities should be implemented and taught. The Department must work to enhance and strengthen existing structures, and to be vigilant about other topical issues such as climate change issues, which are important and which may compromise food security [15,16,17]. This lead to the concept of inter-sectorality of food security where others sectors are involved in food security issues as stated by author [5].

4.2.2. Research and Education Objectives

The term food and nutrition security didn't appear very much in both the university strategic plans, the course chapters and title as well as in the research topics according to the audit and the survey. It would be best to systematically consider all aspects of food security in training programmes and to establish a logical sequence between different courses. The curricula should be designed to allow students to be fully involved in food security related courses and programmes and also should address all the risk factors associated with food and nutrition insecurity. For example, it was important to mainly consider climate change issues that were reported to severely affect the food and nutrition security in the Sahelian zone [18]. Stakeholders and alumni could be more involved in curriculum development, and the university should consider all issues highlighted in order to improve the programmes. The creation of either an agricultural institute or a faculty with a degree on food security with options including the four pillars of CAADP as suggested in the focus group discussion could also be a way of re-orienting the education objective on food and nutrition security. However the food security mission on such institute or faculty should be clearly defined in an integrated way by involving many ministries such as the ministry of agriculture and food security, the ministry of animal resources, the ministry of higher education and scientific research, the ministry of environment and climate changes, the ministry of health, the ministry of transport and communication and the ministry of renewable energies. This would lead to the inter-sectoral coordination that was seen as a guarantee to avoid food

security falling under the remit of a single sector and to ensure a well-balanced approach to its four major dimensions (access to food, food availability, utilisation and stability) [7,18,19]. Food security situation at the universities should also be considered in the internal management of food security in the campus. Indeed, as a study in South Africa has shown [20], the food and nutrition security situation in higher education institutions in the developing world and Burkina Faso in particular is very serious, and studies have even demonstrated a causal relationship between food insecurity and student academic achievement with a drop-out rate of up to 50% - 60% [21].

Another issue of discussion was the need for the universities to increase research activities in agricultural extension on food security, on the importance of food safety and food quality as well as food accessibility, in order to expand their reach and increase their impact at community and national level. However, the universities need some local as well as external funding to support these researches in agricultural extension. The national or local funding could be addressed through a strategy of performance based funding in order to promote better management of research and finance at public university [22].

5. Conclusions

This study gave information about the perceptions on food security at university as well as at stakeholder level, and all groups considered the situation of food and nutrition security in Burkina Faso to be very bad.

The audit and the survey showed that the visibility of the terms “food and nutrition security” was not very much highlighted in the university strategy documents, but the group surveyed was unanimous that the universities have a key role to play in food and nutrition policies. The creation of either an agricultural institute or a faculty with a degree on food security was also suggested. In addition, it was recommended that the food security mission at university level should be clearly defined in an integrated coordinated manner by involving many ministries.

The findings of the study imply that agricultural higher education has a key role to play to contribute to the achievement of food and nutrition security in the country, and therefore, policy makers should give opportunities and facilities to these institutions.

Acknowledgements

Thanks to CTA and RUFORUM for funding the study.

Special Thanks to Judith Ann Francis and professor Hamidou Boly for developing and supervising the research project.

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