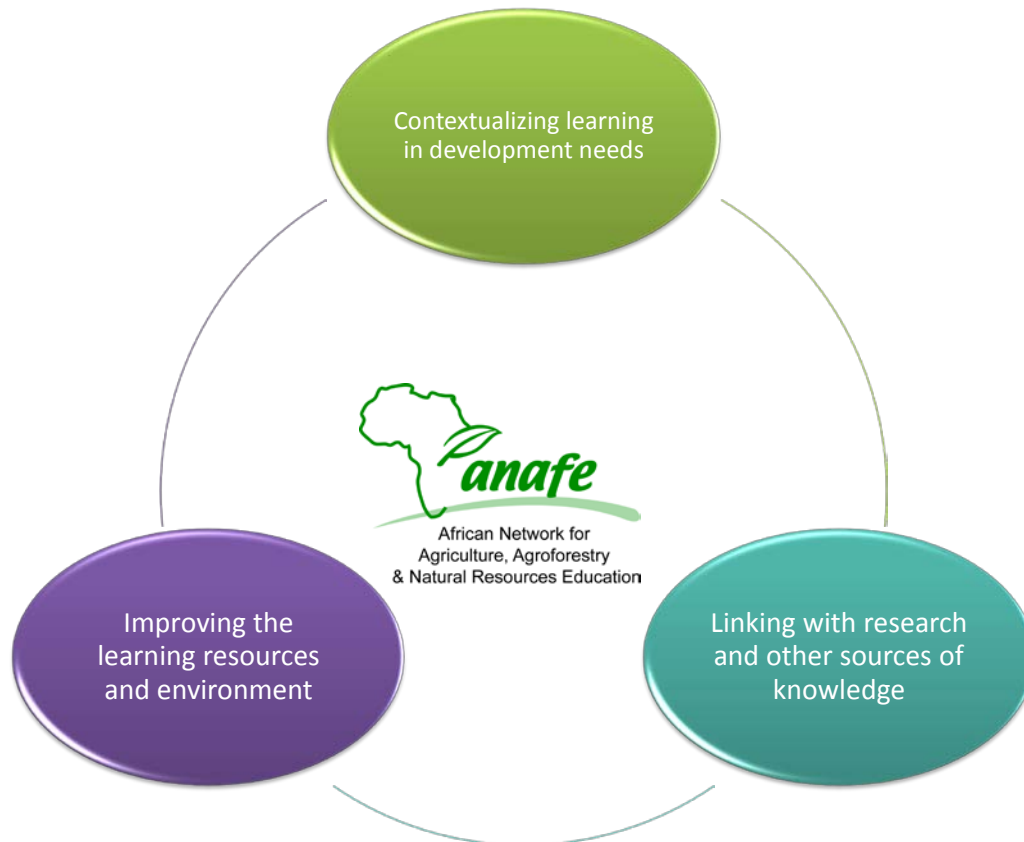

IMPROVING THE AVAILABILITY AND RELEVANCE OF AGRICULTURAL LEARNING RESOURCES IN AFRICA

REFERENCE NUMBER: MRCI No. 39



OVERALL PROJECT REPORT

**FOR THE PERIOD
1st NOVEMBER 2008 – 30th NOVEMBER, 2010**

TABLE OF CONTENTS

ABBREVIATIONS	3
PROJECT DETAILS	4
BACKGROUND INFORMATION	5
Introduction.....	5
Goals.....	5
Purpose	5
Major Expected Outputs.....	5
Activities.....	5
ACTIVITY AND OUTPUTS SUMMARY	6
Progress in intended outputs.....	6
Impact of the Project So Far	6
ACTIVITY AND OUTPUT LOG FRAME OF PROJECT EXECUTION.....	7
LESSONS LEARNT.....	9
Working with Partners.....	9
Good Practice/Innovation	10
Project / Program management.....	11
FINANCIAL REPORT FOR THE PERIOD	13
SUMMARY OF EXPENDITURE	14
PRODUCTS AND PUBLICATIONS EMANATING FROM THE PROJECT.....	15
ANNEXES.....	17

ABBREVIATIONS

AAU	Association of African Universities
ANAFE	African Network for Agriculture, Agroforestry and Natural Resources Education
AVU	African Virtual University
ECA-RAFT	East and Central Africa Regional Agricultural Forum for Training
ICRAF	World Agroforestry Centre
ICTs	Information and Communication Technologies
MRCI	Mobilizing Regional Capacity Initiative
NARI	National Agricultural Research Institute
RAFT	Regional Agricultural Forum for Training
SA-RAFT	Southern Africa Regional Agricultural Forum for Training
SSA	sub-Saharan Africa

PROJECT DETAILS

Title of the Programme	Improving the Availability and Relevance of Agricultural Learning Resources in Africa
Reference Number	MRCI No. 39
Period Covered by Report	1 st November 2008 – 30 th November, 2010
Name of Lead Institution and Director	African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE). Aissetou Drame Yaye, Executive Secretary ANAFE
Key Partners	ANAFE member institutions, in collaboration with NARIs, ICRAF, African Virtual University (AVU) and Regional Education and Research Networks
Countries to be covered	Benin, Mali, Kenya, Ethiopia, Sudan, Tanzania, Malawi and Rwanda

COMPONENT	PLANNED	ACTUAL
START DATE	1 st November 2008	1 st December 2008
END DATE	31 st October 2010	30 th November 2010
TOTAL PROGRAMME BUDGET	£ 80,000	£ 80,000

BACKGROUND INFORMATION

Introduction

Rural populations in Africa depend almost entirely on agriculture and the exploitation of natural resources for their livelihoods and development. Tertiary agricultural education must take a centre stage in the institutional reform hierarchy as well as in the development process if the ambitions are to be achieved. Education and training for rural people is a strategic priority if we are to achieve food security, eradicate malnutrition and poverty and spur development in rural Africa.

The whole philosophy and culture of integrating and contextualizing knowledge systems is at its infancy in Africa. In agriculture, too much emphasis has been placed on the adoption of modern technologies, some of which are particularly inappropriate for small-scale farmers. Thus, it is quite common to find learning materials that emphasize exotic animals or crops, management systems that apply technologies that are out of reach (economically), and educators whose familiarity with local circumstances is limited. Thus, they are unable to draw examples or case studies from the local environment.

Experience shows that a change in the learning systems in terms of content, relevance and quality of delivery will influence many other areas such as policy, strategies and practice. Improving the learning resources and the whole education system is a fundamental need. This project will seek some answers to the questions above and also showcase ways and means to make improvements.

Goals

To improve access to locally relevant educational materials based on agricultural research experiences in Africa.

Purpose

Transforming agricultural education through well-adapted and new learning materials developed by African authors

Major Expected Outputs

These are:

Output 1: The reasons for failures to generate relevant learning resources in agriculture and natural resources in Africa understood, and policies and strategies to address the bottlenecks identified.

Output 2: A pilot project that will attract African Agricultural Writers to produce contextualized learning materials launched.

Activities

The two outputs will be achieved through implementation of three activities:

Activity 1: Surveying, synthesizing and analyzing the underlying causes for the lack of local relevant learning resources

Activity 2: Launching one pilot project in each of 4 sub regions for groups of African agricultural writers to develop locally contextualized learning resources

Activity 3: Reviewing and publishing materials developed under activity 2 above

ACTIVITY AND OUTPUTS SUMMARY

Progress in intended outputs

This report is for the whole project duration. It therefore covers the two outputs and the three activity lines. The achievements are listed in Table 1.

Table 1. Achievements over the project period: 1st December 2008, to 30th November, 2010.

No	Progress to date	Reference
1	Inception Phase Report; Official letters of interest in the project received from university authorities in all the eight target countries: Mali, Benin, Sudan, Ethiopia, Kenya, Tanzania, Rwanda and Malawi. The inception report was produced. The lead consultant was identified and eight country level consultants engaged. The survey instrument was developed and shared with all consultants.	Annexes 1-2
2	Surveying, analyzing and synthesizing causes for the lack of relevant learning resources. Surveys to identify the reasons and failures to generate contextualized learning resources were carried out in the eight countries: Mali, Benin, Sudan, Ethiopia, Kenya, Tanzania, Rwanda and Malawi and national reports produced. A synthesis report covering the eight countries was also produced.	Annexes 3-10
3	Launching of a pilot project for African learning material writers; Twenty seven participants selected from Swaziland, Botswana, Zimbabwe, Malawi, Zambia, Tanzania, Rwanda, Mauritius, Burkina Faso, Cote d'Ivoire, Ghana, Niger, Cameroon and Ethiopia were trained in developing contextualized learning resources. Thereafter, eight groups of writers were established to develop the materials. Learning resources for developing the contextualized learning materials can be accessed at: http://ariadne.cs.kuleuven.be/anafemoodle/	Annexes 11-12
4	Reviewing, publishing and distributing the materials. Eight materials encompassing: Agroforestry; Natural Resource Management; Climate Change; Crop Production; Crop Protection; Animal Production; Animal Nutrition and Soil fertility Management were produced.	Annexes 8

Impact of the Project So Far

The major project impacts can be summarized as follows:

- Awareness creation of Lecturers and University administrators on the need to develop contextualized learning materials.
- Capacity strengthening of lecturers in survey design, data capturing, analysis and write-up.
- The greater realization that institutions in sub-Saharan Africa (SSA) do not have mechanisms in place to reward production and use of contextualized learning materials
- The greater awareness that linkages of institutions with stakeholders is weak.
- Lecturers have been exposed to various ways of accessing learning materials for course material development online.
- Formulation of a platform for collaboration among lecturers in SSA on contextualized learning material development.
- A successful pilot phase on contextualized learning materials development.

ACTIVITY AND OUTPUT LOG FRAME OF PROJECT EXECUTION

No	Activity	Starting date and Duration	Budget (USD)	Actual Input	Achieved outputs	Progress Report on Activity	Recommendations/Comments
1	Sensitization and formalization of partners' involvement	1 st December 2008 (2 months)	4,250	Communication with partners through email, telephone, etc.	Written interest expressed by leaders of ANAFE members in the target countries	Activity successfully completed	This activity was facilitated by ANAFE regional chapters within the four sub regions in SSA. This demonstrated the importance of networking and of having valuable contact persons in each country and sub region
2	Identifying and recruiting a Lead Consultant and 8 national Consultants	1 st January 2009 (4 months)	3,400	Development of Terms of reference; Advertisements and, communication with identified persons	A top level Lead consultant and 8 national consultants identified and contracted	Activity successfully conducted	It was very difficult to attract a lot of applicants due to the demanding nature of the assignment. In most cases it was difficult to receive at least three (3) applicants from each country as per AAU requirements. The maximum number of CVs we could get per country was two. In some we got only one. Requesting concept notes from interested applicants was a good way of screening for the ideal applicants. Unfortunately, this limited the number of applicants.
3	Development of a harmonized survey instrument	15 April (45 Days)	11,900	Selection of three consultants (2 English and 1 French) to assist the Lead consultant in developing the first draft instrument. Supervision of the consultants' work by ANAFE secretariat. A three-day workshop organized in Nairobi with the Consultants by ANAFE to finalize the instrument.	Highly relevant and harmonized survey instrument developed and available in both English and French.	Activity successfully completed.	In this case we also faced the same problem of attracting a large number of applicants. There is a need to discuss with AAU on how best to handle the requirement of at least three applicants for recruiting consultants in our project. In our case, it was impossible to get 3 CVs because of the requirement that potential candidates submit concept notes first. Many potential applicants were either not willing or able to write these concept notes.
4	Briefing of the 8 national consultants on the harmonized survey instrument	14 May 2009 (10 days)	8,500	Organization of a two-day workshop in Nairobi, Kenya for the 6 English Speaking national consultants, and a one-day one in Cotonou, Benin for French speaking Consultants. The ANAFE Secretariat staff was actively involved in the Nairobi workshop and the ANAFE Network Manager travelled to Cotonou to facilitate that workshop.	Survey instruments improved and adjusted to the specific countries. Target institutions for each country identified.	Activity successfully carried out.	The participants to the two workshops highly appreciated the need to implement the project and due to their participation they felt that they owned the project and were energized to implement the work.
5	Carrying out of surveys, analysis and	1 st June 2009 (2 months)	27,200	Travel for data collection by national consultants within their countries	National reports written	Activity successfully completed in	Consultants from all the eight countries successfully completed the assignment.

	write up of findings and submission of national reports					all countries.	
6	Synthesis of National Reports and submission of synthesized report	1 st August 2009 (45 days)	3,400	National data analysis and writing of synthesis report.	A synthesis report written	Activity successfully conducted	The data from the country level studies was pooled together and cross-country comparisons carried out. Critical insights were obtained from the report. Further work on the report will be done with the view of publishing it in international journals.
7	Validation of findings with RAFTs, Identification of areas to write up on and selection of 4 groups of two co-authors for write-shops	1st September (30 days)	5,950	Electronic and telephone communication and travel; Electronic consultations with RAFTs and target countries	Findings validated; Areas to develop learning materials identified and agreed upon and groups of co-authors identified.	Findings validated in West Africa from 10 th -11 th December 2009 and for east and Southern Africa from 24 th to 25 th May, 2010	The findings from the survey on contextualized learning materials were widely shared in the two regional meetings. There was general impression that the need for the production of contextualized learning materials was urgent throughout SSA. Areas for material writing were identified as: Agroforestry; Natural Resource Management; Climate Change; Crop Production; Crop Protection; Animal Production; Animal Nutrition and Soil Fertility Management.
8	Capacity strengthening workshop for the Authors	12 th to 16 th April 2010 (30 days)	18,700	Organization of training workshops for authors (5 days in Francophone Africa and 5 days in Anglophone Africa)	Authors trained in principles of contextualized learning material development	A combined activity with simultaneous translation was carried out in Nairobi Kenya from 12 th to 16 th April, 2010.	The activity was successfully carried out jointly with ICRAF (World Agroforestry Centre) through their Agrolor Project. In total 27 participants from 14 countries in SSA attended. The materials to be produced were also increased from the original four to eight materials. The Agrolor project provided an additional \$45,000 to train 12 more lecturers.
9	Writing of four materials (National Consultants)	1st of December, 2009 to 31st March, 2010	20,400	Technical Support	In total, seven materials have been produced	Activity successfully completed.	Seven groups of co-authors have successfully completed the writing of the materials. The materials will be uploaded onto the ANAFE web-site.
10	Technical Support in material writing	1st of February to 31st March, 2010	5,440	Technical Support	This stage has not been done.	More time would be needed to complete.	More time would be needed to liaise with reviewers to successfully complete

LESSONS LEARNT

The lessons learnt in the project are covered under the following headings: Working with Partners; Good practice/innovation and Project Management.

Working with Partners

On working with partners, the major lessons we learnt are that: i. Partners if carefully chosen bring on board significant added benefits to the cause, ii. There is a need for a platform to champion the development of contextualized learning materials, iii. Having scientists working in different countries on similar topics strengthens and enriches the findings and iv. The problems bedeviling tertiary agricultural training as far as production of contextualized learning materials throughout SSA are fairly similar and iv. There is substantial scope of forming contextualized learning materials spanning across the whole continent.

Partners if carefully chosen bring on-board significant added benefits to the cause. The consultative process of developing the harmonized survey instrument was very comprehensive and a gratifying experience to all concerned. All participants to the instrument development process acknowledged the participatory nature of the process used. They felt that this is a method which ensures ownership of the project.

There is a need for a platform to champion the development of contextualized learning materials. All national consultants appreciate the relevance and timely nature of the project. They understand the problem of lack of contextualized learning materials in their institutions. However, so far, there has been no platform to champion the development of these materials. This project, they felt, had provided them that opportunity to advance the cause of the development of learning materials.

Scientists working on similar topics in different countries strengthens and enriches findings: While all scientists noted similar constraints to production and use of contextualized learning materials, further insights from individual countries further strengthened and enriched the findings to get a sub-regional perspective.

Problems affecting tertiary agricultural training in SSA regarding contextualized learning materials are fairly similar: There was very minimum variation in the problems affecting production of contextualized learning materials in SSA. All countries noted that policies to promote the production and use of contextualized learning materials were not existent in their institutions. This has been the major stumbling block in promoting production and use of contextualized learning materials.

There is substantial scope of forming contextualized learning materials spanning across the whole continent. The lecturers to the training workshop material development workshop quickly identified other lecturers working in the same areas from a different country. The lecturers developed materials which will be useful in the tertiary agricultural and natural resource management training throughout sub-Saharan Africa.

Good Practice/Innovation

In good practice/innovation, the major lessons we learnt are that: i. In project design, involvement of experts in research methods is critical ii. Creative ways of attracting consultants who can do a good job have to be sought, iii. Standardized methods for data processing facilitates data analysis and comparisons across countries iv. Standardized report writing facilitate the derivation of conclusions and recommendations across countries. This is true when carrying out cross-country comparisons, v. In material writing, using current methods of ICT would facilitate the search for information from varied sources and vi. Using expertise available elsewhere in the world can help in the formulation of a rubric on which to base the materials developed.

In project design, involvement of experts in research methods is critical. The process of putting together the instruments and formulating the framework on how to conduct the project work was enriched by input from the ILRI/ICRAF research methods group. This is important at the project outset as you can avoid pitfalls of bad project design and data-capturing aspects which could jeopardize the whole project output.

Creative ways of attracting consultants who can do a good job have to be sought: In some countries, it was difficult to attract significant numbers of applicants for the consultants' position. This could have been caused by the requirement of the lecturers to submit a concept note upfront on how they would proceed with the study. While this led to the majority of the lecturers not responding, it provided the first screening test. It appears like we got committed lecturers in each country to lead the work.

Standardized methods for data processing facilitates data analysis and comparisons across countries: Since data collection forms were electronically tagged, submission of completed forms was straightforward. Comparisons across countries were therefore very easy to derive. Datasets could easily be handled to answer key study questions.

Standardized report writing facilitates the derivation of conclusions and recommendations across countries: From the beginning of the study, all countries agreed on the same format for data collection and reporting. Key questions were therefore similarly addressed across all countries. Producing a synthesis report was therefore made easier by standardized reporting structure.

In material writing, using current methods of ICT would facilitate the search for information from varied sources: There are a number of resources available on the internet which lecturers can use to enrich their teaching resources. Knowledge on how to access the materials is critical.

Using expertise available elsewhere in the world can help in the formulation of a rubric on which to base the materials developed: In conducting the training programme on contextualized learning material development, we teamed up with expertise in Belgium and Germany with experience in developing learning materials. It was therefore easy to agree on a Rubric by which we could evaluate the learning materials,

Project / Program management

In project management we learnt the following lessons: i. It is imperative to share with all participants, guidelines to project execution, ii. There is a huge demand to scale-up training in contextualized learning materials development iii. It is a big challenge to meet the requirements for engaging of consultants particularly given the nature of our project, iv. In project planning it will always be important to cater for differences in timely project execution across countries; v. In engaging country consultants, it will be important to involve authorities in the institutions so that they be made aware that their staff member has been selected for the assignment and vi. In running a project of this nature involving both Francophone and Anglophone countries, it will be important to carry out training programmes separately.

It is imperative to share with all participants, guidelines to project execution: In most projects, participants are familiar with *per diems* being given to them and not full board and submission of receipts for all expenditure items. Having shared and discussed with the participants the requirements of AAU on this aspect, all participants appreciated the need to stick to the guidelines. It is therefore important in project execution to be as open as possible on all requirements.

There is a huge demand to scale-up training in contextualized learning materials development: While we appreciate that this is a pilot phase, we are already seeing the huge need and potential to reach as many lecturers as possible to enhance their capacity in contextualized learning material development. We should continually seek out for other resources to scale-up the project.

It is a big challenge to meet the requirements for engaging of consultants particularly given the nature of our project: The AAU stipulates that before engaging consultants it is important that at least three applicants be evaluated. Normally, if a person requests for CVs only, these are readily made available. However, we insisted that over and above the CVs, we needed concept notes so that we could be sure that the persons we would engage are in a position to carry out the work. As soon as this request was made, very few people further pursued the application. There is a need for ANAFE to discuss with AAU on how such situations could be handled and what degree of flexibility is permitted.

In project planning it will always be important to cater for differences in timely project execution across countries: While at planning level, we envisaged that the surveys should take two months to accomplish, it was important to include some window period which would facilitate adequate data compilation and analysis and feedback and also the relative speed of writing up of individual consultants. Three more months could have been budgeted for to conduct these activities. In addition, technical backstopping on materials produced would have required time for editors to go through and comment. It was difficult to complete this stage of the assignment due to inadequate time.

In engaging country consultants, it will be important to involve authorities in the institutions so that they be made aware that their staff member has been selected for the assignment. Some consultants really get overwhelmed by other engagements they will be involved in during the assignments and it will become difficult for them to meet the set targets and they can decide to

be unresponsive. However, keeping someone within the institutional management in the loop of activities could provide the impetus to ensure work is completed on schedule.

In running a project of this nature involving both Francophone and Anglophone countries, it will be important to carry out training programmes separately: During the course of the training programme on writing contextualized learning materials, it was evidently clear that the Francophone group could not communicate as much as they would have wanted to, given the language barrier. Although simultaneous translation was being conducted, most of the discussions were taking place in English. In future it will be important to have separate training programmes if we are going to have good participation from both Francophone and Anglophone countries.

FINANCIAL REPORT FOR THE PERIOD

Item	Activity	Expenses Incurred US\$	Receipt Ref	Total
1	Launching of a writers' pilot project for African learning material writers			
1.1	Writing of materials (national consultants). Technical support	8500	Summary of payments	8500
1.2	ANAFE operational costs			
	Total			8500

SUMMARY OF EXPENDITURE

Title of Project: Improving the Availability and Relevance of Agricultural Learning Resources in Africa			
Project Number: MRCI No. 39			
Item	Current Period	Since Inception	Total
Personnel			
Professional Services (Consultants)	8500.00	34102	42602.00
Travel (Air tickets and Taxes)		19370.96	19370.96
Ground Transport		2709.84	2709.84
Airport Transfer		213.18	213.18
Entry visa		172.50	172.50
Accommodation and Meals		26840.05	26840.05
Operational Costs		4206.49	4206.49
Equipment			
TOTAL	8500.00	87615.02	96115.02

PRODUCTS AND PUBLICATIONS EMANATING FROM THE PROJECT

The following products have been produced during the reporting period:

1. Mobilizing Regional Capacity Initiative Project: Improving the Availability and Relevance of Learning Resources in Africa. Production of Harmonized Survey Instrument for Data Collection (Anglophone Chapter)
2. Mobilizing Regional Capacity Initiative Project: Improving the Availability and Relevance of Learning Resources in Africa. Production of Harmonized Survey Instrument for Data Collection (Francophone Chapter)
3. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Ethiopia Country Report. Getachew Alemayehu
4. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Tanzania Country Report. G.H. Laswai, L.A. Mtenga, A.E. Kimambo
5. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Rwanda Country Report. Rukazambuga Ntirushwa T. Daniel
6. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Malawi Country Report. W. Mwase
7. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Mali Country Report. Sidiki Gabriel Dembele
8. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Benin Country Report. Assogbadjo Achille Ephrem
9. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Kenya Country Report. E. Kenya
10. ANAFE-MRCI Project, Improving the availability and relevance of agricultural learning resources in Africa. Sudan Country Report. A. Abdalla.
11. Drame-Yaye, A. and S. Chakeredza, 2009. Contextualizing Local Knowledge into Tertiary Agricultural Learning Resources in sub-Saharan Africa: Insights from Malawi and Benin. A paper presented at the Africa-Wide Regional Workshop on Science, Technology and Innovation held from 19-21 October, 2009. Birchwood, South Africa.
12. Chakeredza, S., A. Drame-Yaye, A.B. Temu, A.Z. Mattee, G. Alemayehu, G. Laswai, W. Mwase, A. Assogbadjo, S.G. Dembele, E. Kenya, D. Rukazambuga, A.M Abdalla, 2009. Production of Contextualized Learning Materials in sub-Saharan African Tertiary Agricultural Institutions: Challenges and Perspectives. Poster exhibited at the 4th Conference of Africa Ministers of Education: 22-26th November, 2009. Hosted by the Association for the Development of Education in Africa: Working Group on Higher Education Sarova Whitesands Beach Resort and Spa Mombasa, Kenya.
13. Chakeredza, S., A. Drame-Yaye, A.B. Temu, A.Z. Mattee, G. Alemayehu, G. Laswai, W. Mwase, A. Assogbadjo, S.G. Dembele, E. Kenya, D. Rukazambuga, A.M Abdalla, 2009. Production of Contextualized Learning Materials in sub-Saharan African Tertiary Agricultural Institutions: Challenges and Perspectives. (**A synthesis report**).
14. ANAFE-MRCI Project “Developing Contextualized Learning Resources for Agriculture, Agroforestry and Natural Resources Management in Tertiary Education”. A training

- workshop report for lecturers in ANAFE member institutions held at ILRI, Nairobi from 12th to 16th April 2010.
15. ANAFE-MRCI Project: Developing Contextualized Learning Resources for Agriculture, Agroforestry and Natural Resources Management in Tertiary Education. A workshop evaluation report.
 16. ANAFE –MRCI Project: Agricultural Education News Vol 16.1, April 2010. Special Issue on Development of Contextualized Learning Resources. Newsletter Available In both English and French.
 17. Agroforestry Learning Material:
 - a. A review of some Agroforestry Tehnologies in Africa
 18. Natural Resource Management Learning Material:
 - a. Introduction to Natural Resources Management
 19. Climate Change Learning Material:
 - a. Climate Change adaptation in African Agriculture and Natural Resources Management: Experiences from Africa
 20. Crop Production Learning Material:
 - a. Sustainable Production of Selected Cash Crops: Coffee, Sugarcane and Tobacco. Part 1: Seedling Production and Management
 21. Animal Production Learning Material:
 - a. Les sysemes de production Bovine
 - b. Alimentation des vaches laitieres
 - c. Maladies Liees a la production laitiere maladies metaboliques
 - d. Milk Products
 - e. Milking Management of Dairy Cows
 22. Animal Nutrition:
 - a. Smallholder Ruminant Livestock Feeds and Feeding in Sub-Saharan Africa
 23. Soil Fertility Management Learning Material:
 - a. Les techniques de recuperation des terres degradees et travail du sol
 - b. Tecchiques de conservation de la fertilite des sols
 24. Policy Brief

ANNEXES

- Annex 1** Agroforestry Learning Material: A review of some Agroforestry Tehnologies in Africa
- Annex 2** Natural Resource Management Learning Material: Introduction to Natural Resources Management
- Annex 3** Climate Change Learning Material: Climate Change adaptation in African Agriculture and Natural Resources Management: Experiences from Africa
- Annex 4** Crop Production Learning Material: Sustainable Production of Selected Cash Crops: Coffee, Sugarcane and Tobacco. Part 1: Seedling Production and Management
- Annex 5** Animal Production Learning Material:
- i. Les systemes de production Bovine
 - ii. Alimentation des vaches laitieres
 - iii. Maladies Liees a la production laitiere maladies metaboliques
 - iv. Milk Products
 - v. Milking Management of Dairy Cows
- Annex 6:** Animal Nutrition: Smallholder Ruminant Livestock Feeds and Feeding in Sub-Saharan Africa
- Annex 7:** Soil Fertility Management Learning Material:
- i. Les techniques de recuperation des terres degradees et travail du sol
 - ii. Techiques de conservation de la fertilite des sols