RUFORUM-IDRC Doctoral Research Awards in Sustainable Agriculture and Natural Resource Management

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**Project Areas (Country/Region)**
- University of Nairobi - Kenya,
- Bunda College, University of Malawi- Malawi
- Sokoine University of Agriculture – Tanzania

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1.0 Abstract

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), currently a consortium of 32 Universities in Eastern, Central and Southern Africa region is mandated to provide leadership in the area of capacity building in the Common Market for Eastern and Southern Africa (COMESA) region. In August 2009, RUFORUM was awarded a three year grant by IDRC ($900,000) with an overall objective of building research capacity in natural resource management to enhance agricultural productivity and food security in the Eastern, Central and Southern Africa region. The activities in this project were designed partly in response to the recommendations from several studies including the World Bank study in 2007, which stressed the need to build Africa’s own institutional capacity for capacity development. Specifically, the project aimed at supporting the training of 28 doctoral candidates through initial research fellowships of US$ 15,000 each in the areas of Soil and Water Management, Aquaculture and Fisheries Science and Dryland Resource Management. The fellowships were organized as follows:

i. Eight (8) research fellowships to support students in the Dryland Resource Management Programme at University of Nairobi, Kenya. The Programme started in November 2008.
ii. Ten (10) research fellowships to support students in the Aquaculture and Fisheries Science Programme at Bunda College, University of Malawi, Malawi. This College has since November 2012 been upgraded into fully a fledged University, the Lilongwe University of Agriculture and Natural Resource Management (LUANAR). The PhD Programme started in October, 2009
iii. Ten (10) research fellowships to support students in the Soil and Water Management Programme at Sokoine University of Agriculture, Tanzania. The Programme started in November, 2010.

The training approach aimed at strengthening student engagement with communities in order to strengthen the role and participation of universities in Africa’s development and socioeconomic transformation. Through the graduate research mentorship approach, student research topics were guided to strengthen the relevance and alignment to the national priorities and immediate real problems facing agriculture in Eastern, Central and Southern Africa by involving practitioners, policy makers, key institutions in the agricultural sector in the conceptualization and design of their research proposals. This was a strategic move to strengthen university contribution to national development and the Comprehensive African Agriculture Development Programme (CAADP). Key areas of project focus included agricultural commodity value chains, markets and market access, policy environment, climate change, environmental conservation.

In addition to the research support, the project provided some funding to support short skill enhancement courses namely; proposal development, scientific writing / journal publishing and scientific data management. By the end of 2012, 28 PhD Students had benefitted from the fellowships and the skill enhancement courses, and these students were at different stages of completing their PhD, depending on actual date of PhD programme commencement.

All the eight PhD beneficiaries from the Dryland Resource Management Programme completed their PhD studies and graduated by end of 2012. Ten out of the fifteen beneficiaries from Aquaculture and Fisheries and Agriculture Resource Economics Programme are currently (by end of August 2013) in the final stages of thesis write up. The four beneficiaries from the Soil and Water Management Programme had by the end of 2012 completed field data collection and mainly involved in finalizing data analysis and interpretation. By the end of August 2013, student had published 40 scientific papers in internal refereed journals, a total of 29 papers in the 2010 and 2013 RUFORUM Biennial Conferences, and at least another 15 manuscripts are in preparation by end of September 2013.

At the time RUFORUM and IDRC were negotiating the budget and contract for this grant, the projection was that students would complete their programme of study in exactly three years. However the reality
turned out to be different. Due to sickness (some students) and the differences in types of research conducted by the students (e.g. field based vs. laboratory based, experiments dependent on natural rain vs. those conducted under controlled conditions) and individual student differences in the speed of working, a good number of students needed more time than the three years to do a good job and complete their studies. RUFORUM also found a challenge of meeting the fees requirement on time. Subsequently, RUFORUM requested for additional funding support (CAD 51,860 in August 2011 and CAD 270,240 in March 2013) to enable the students conclude their research activities. As a result, the IDRC/RUFORUM doctoral grant was extended up to September 2013 to allow adequate time for quality assessment of the student’s thesis documents by both internal and external examiners.

By August 2013, most students had either completed their studies or submitted their theses. The main outcomes of the IDRC support are as follows;

a. RUFORUM was able to demonstrate that it is possible to offer quality PhD training in selected African Universities. However, adequate institutional support from the host institution is critical.

b. Based on the experiment with IDRC research grant support, RUFORUM Vice Chancellors approved incorporation of Doctoral Grants as a funding window to support PhD research in the region.

c. RUFORUM Universities recognized the great opportunity for strengthening staff capacities through the regional PhD programmes and in September 2013, approved the launch of Graduate Teaching Assistantships where universities would offer fee waivers for a targeted number of staff from the other member universities.

d. Based on the IDRC model and experiment with RUFORUM Regional Programmes, Carnegie Cooperation of New York awarded a $ 1 Million grant to RUFORUM to support research of PhD students registered under the RUFORUM regional programmes using a competitive Grant system overseen by the RUFORUM Technical Committee.

e. The IDRC support not only helped RUFORUM train 28 PhD level scientists for the region, but also catalyzed more interest in the PhD training in the region. Currently RUFORUM is training 155 PhD students of whom 38% have graduated and returned to their home institutions.

A number of lessons were generated and are being used to improve design and administration of Doctoral training programmes overseen by RUFORUM;

- Well targeted call for proposals is needed and this needs to be overseen by the RUFORUM Technical Committee
- There has to be a better clarity on what the grant covers to avoid undue expectation and the clarity on role of RUFORUM Secretariat Vis- a –Vis host universities
- Where feasible, the grant amounts should also cover some tuition to keep students focused on their studies
- Continued support for short skill enhancement trainings and opportunity for bringing grantees together for Professional Community building events such as the RUFORUM Biennial should be incorporated in the training and funding package for all the regional doctoral programmes. In implementing the project, RUFORUM realized that the skill enhancement courses particularly the Scientific Data Management trainings enabled the students to produce quality data and thesis write-ups. The Biennial Conferences on the other hand enabled the students to initiate networking, and exchange of contacts with regional senior scientists who were present at the meeting.
- RUFORUM needs to assign a dedicated person to manage the project. The grant should cover some staff time for such staff.
Keywords
Doctoral training, natural resource management, Skill enhancement, RUFORUM

2.0 Research problem
For most countries in Africa, agriculture is the main driver of economic development. The overarching framework guiding agricultural development in Africa is the Comprehensive African Agriculture Development Programme (CAADP). Both CAADP Pillar 1 (Water and Land Resource Management) and Pillar 4 (Agricultural Research, Technology Dissemination and Adoption) place emphasis on natural resource management and agricultural training and education. The meeting of Ministers of Agriculture and CAADP platform in March 2008 identified capacity building to support sustainable resource management in the areas of forestry, soils, water, and land use as priority investment areas. Several studies in the Eastern Central and Southern Africa (ECSA) have also articulated the urgent need to develop capacity to manage drylands where several communities live, especially pastoralists. In 2007, the New Partnerships for Africa’s Development (NEPAD) urged African governments to build capacity to exploit Africa’s natural resource base, especially fisheries and aquaculture so as not only to increase income from productivity increases, but also nutritional food security. As a contribution, RUFORUM in this project undertook a series of strategic interventions to build capacity in the area of sustainable natural resource management, as a means to increase agricultural productivity and food security especially among vulnerable communities in the ECSA region.

3.0 Project Objectives
The overall objective of the project was to build research capacity in natural resource management to enhance agricultural productivity and food security in the Eastern, Central and Southern Africa region.

Specific objectives were to provide the following, through a Competitive Grants System (CGS):

- Ten PhD research fellowships in the area of Aquaculture and Fisheries Science and Agricultural Resource Economics, Lilongwe University of Agriculture and Natural Resources – Bunda College, Malawi
- Ten PhD research fellowships in Soil and Water Management, Sokoine University of Agriculture, Tanzania
- Eight PhD research fellowships in Dryland Resource Management – University of Nairobi, Kenya
- Training in multidisciplinary research skills to 28 doctoral students;
- Help to support recipients in publishing at least one peer-reviewed journal article and conference paper

Overall assessment indicates that the objectives of the project were met. The objectives listed in the approved grant document aimed at awarding doctoral grants to a total of 28 students with suggested allocations to four postgraduate programmes as listed above. However, during the implementation of the project due to unexpected circumstances there was a change in the slots of the awardees. This was mainly as a result of decline of scholarship offers by some students; poor performance by some students who did not qualify for second year because of failing to attain the required pass marks in course work, some students opted out due to sicknesses and others deferred studies by a year. The most affected programme was the Soil and Water Management Programme at Sokoine University of Agriculture, where many of these problems arose. RUFORUM requested officially re-allocation of these scholarships to the two programmes in Malawi so that the project could still maintain the total number of grants that were to be awarded by the project.

In view of the above realities, the final allocation of fellowship had the following distribution:
4.0 Methodology

4.1 Circulation and advertisement of the RUFORUM-IDRC research fellowships

One of the important activities of the project was to issue calls for proposals from interested students. The activity was designed in conformity with the IDRC systems/procedures for awarding grants. As such the methods followed and designed to achieve the objectives were highly systematic and transparent as elaborated in the subsequent section of this report. By the time of this grant, RUFORUM was already implementing a Competitive Grant scheme that was focusing on improving productivity of natural resources and incomes of smallholder farmers and other vulnerable communities hence this provided lesson sharing point that were filtered into the IDRC call.

Advertisements were issued in form of an open call for proposals prepared and circulated through various channels including emails, RUFORUM website, Partners websites e.g RUFORUM member Universities, and RUFORUM monthly newsletters. These adverts were circulated in two stages mainly because the students in the targeted programmes were to commence the studies at different times due to differences in university calendars. By the time the first call for proposal was released in November 2009, only students in three targeted Programmes i.e. Dry land Resource Management, Agricultural and Resource Economics and PhD Aquaculture and Fisheries Science programmes were completing course work. The initial deadline of the call was 18th December 2010 but was extended to 31st December to allow students ample time for cleaning up their proposals as well as consultations with respective supervisors. A total of 33 proposals were received in response to the first call for the IDRC/RUFORUM doctoral awards fellowship.

Subsequently, the second call targeted the students in the PhD Soil and Water Management Programme at Sokoine University of Agriculture (SUA) in Tanzania. This call was sent out in May 2010. It is important to take note that during this time, the PhD Soil and Water Management Programme had not been launched as such the concepts that were received from the students were similar to those that had been submitted for their application for admission at SUA. For this second call in particular, a total of 10 proposals were received.

4.2 Review of the Submitted proposals

RUFORUM secretariat through the Training and Quality Assurance Office, compiled all the Proposals/concept notes submitted by interested applicants and identified external experts/independent reviewers to rank them. The selection of the reviewers took into consideration past track record and demonstrated competencies in the discipline, experience in reviewing proposals, academic qualification as well as accepting to review the proposals at a minimal cost. Each category of proposals (separated by the target programme) was reviewed by at least two external experts. The details of the reviewers are as follows:
4.3 Process of awarding the grants

The External reviewers assessed the proposals by reading through the proposals against the set criteria. At the end of the exercise each reviewer gave scores to the applicants and submitted reports to the RUFORUM Secretariat for final decision. A Meeting was organized at Grand Imperial Hotel in Kampala Uganda. This was attended by RUFORUM (Prof Adipala Ekwamu – Executive Secretary, Dr Moses Osiru – Deputy Executive Secretary, Dr Wellington Ekaya – Programme Manager, Training and Quality Assurance, Sylvia Chindime Mkandawire – Programme Officer, Training and IDRC (Pascal Sanginga, and Rita Bowry) officials.

A separate selection meeting was held for Soil and Water Management, at the RUFORUM Secretariat. The meeting comprised of RUFORUM (Prof Adipala Ekwamu, Sylvia Chindime and the Technical Committee member representatives (Prof Patrick Rubaihayo and Prof Majaliwa).

The fellowships were awarded based on the average compiled scores from reviewers for each individual student. Notably, strategic allocations were agreed by considering the research scope, study areas as well as gender. Finally official communication to the successful applicants was done by RUFORUM Secretariat and grants were sent to the institutions to manage them and ensure proper usage of grants.

The selection and award process, which was designed to guide the identification of successful candidates, was followed for call 1 and 2 of the IDRC/RUFORUM fellowships. However, there are some challenges that were experienced during the selection process and these include:

- Delayed submission of the external reviewer’s assessment reports of the applications. This affected the subsequent activities outlined in the project work plan which included the communication to the successful applicants.
- Low female response to the IDRC/RUFORUM grants award call – only 7 out of 28 of the awardees were females (25% representation of females)

Some challenges were also noted at institutional levels (RUFORUM Secretariat and Participating Universities). The initial arrangement of this grant was that IDRC pays for research fees of US$. 15,000 while RUFORUM carters for tuition fees and other training related fees. The total RUFORUM contribution per students was amounting to US$. 45,000. In this kind of arrangement, RUFORUM had to continuously look for support to cover student’s tuition fees which were very high. This caused some delays in fulfilling the RUFORUM’s obligation and it considerably slowed students’ progress.
At University level, some students had challenges in accessing their supervisors due to university teaching workloads. However, as of today, most of the students have had their thesis cleared. At the moment, the documents have been sent for external examination.
Table 1 Project Planned activities, time frame of achievement, outputs and impact from the implementation

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<th>Planned Activities</th>
<th>Time frame</th>
<th>Achievement</th>
<th>Outputs</th>
<th>Outcome/impact</th>
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<tr>
<td>1.</td>
<td>Research grant Announcements and processing for PhD students at Bunda College of Agriculture and University of Nairobi</td>
<td>November 2009</td>
<td>Announcement was prepared and circulated widely through various media, website, newsletters and emails with deans of university faculties (Annex 1: <em>Announcement – Doctoral research Fellowships DRF/AQ/RE/09</em>)</td>
<td>The response to the call was good. Thirty three proposals were received. Out of these 15 were from Dry land Resource Management, 8 from Agriculture Resource Economics and 10 from Aquaculture and Fisheries Sciences</td>
<td>There is greater and enhanced visibility of the RUFORUM – IDRC doctoral grants initiatives as this call was widely circulated and went beyond the targeted universities.</td>
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<td>2.</td>
<td>Research grants announcement and award for 10 PhD students in NRM</td>
<td>June 2010</td>
<td>Announcement circulated widely through various media, website, newsletters and emails with Deans of university faculties (Annex 2: <em>Announcement – Doctoral research Fellowships DRF/AQ/RE/09</em>)</td>
<td>A total of 10 proposals were received.</td>
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| 2.  | Processing for the PhD students - External Review of the Proposals                  | December 2009 | As noted from the methodology, external reviewers were selected based on their expertise in the research area to examine the proposals and give feedback in three areas; strength, weakness                                                                                                                                                                                                                                                                                                                                 | • A report from the three external reviewers compiled and shared with RUFORUM and IDRC. Scores were ranked for each applicant  
• Database of the reviewers established for future research project.                                                                                                                                                                                                                   | Improved quality of the Proposals that were externally reviewed as each student received notes on the areas of improvement. The Research problems submitted by the students, adaptively addressed the needs of food security as stipulated |
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<th>and areas of improvement. (Annex 3 Computed Spreadsheet for scores of applicants)</th>
<th>reference</th>
<th>requirement from the call also as a contribution to Millennium Development Goals.</th>
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<td>3.</td>
<td>Fellowship Selection Meeting for Drylands Resource Management, Aquaculture Fisheries Science and Agriculture Resource Economics Conducted</td>
<td>March 2010</td>
<td>• The results from the external reviewers were compiled. Subsequently, a meeting was held to review the results from the independent experts and endorse the students to be awarded the doctoral grant (Annex 4 Award Minutes for ARE, DRM, AQFS)</td>
<td>• 20 candidates under the Dryland Resource Management, Soil and Water Management and Agriculture Resource Economics were awarded scholarships</td>
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<td>Fellowship Selection Meeting for NRM students</td>
<td>August 2010</td>
<td>• (Annex 5 SUA award minutes)</td>
<td>• Eight were recommended for the award but only four awards were given to SUA. The decline in number was because some students declined the of scholarships <em>(opted to pursue their PhD studies in Foreign universities)</em>, sickness, and deregistration due to poor performance</td>
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| 4. First, second and Third reporting to Board of Trustees | August 2010, August 2011 and August 2012, respectively | At the end of each RUFORUM financial year, Annual General Meeting is held to share progress reports, milestone achieved with the stakeholders and the RUFORUM Board of Trustees during the financial year. Accordingly, in August 2010, 2011 and 2012 Annual General meetings were held at Victoria Hall Hotel in Zimbabwe, Capital Hotel in Lilongwe Malawi, and Imperial Botanical Hotel in Uganda, respectively. RUFORUM reporting progress in implementation of the grant to the AGM. | Project awareness to the RUFORUM Board Members
RUFORUM Monthly (August 2011) newsletter article circulated to the Board members and globally about the PhD Students who had finished their doctorate training exactly 3 years
This activity exposed the project to greater leadership role in terms of implementation, Monitoring the progress and reporting. Additionally, the AGM and RUFORUM Newsletter coverage enhanced the visibility of IDRC/RUFORUM project as well as its accountability. |
| 7. | Training in research skills including proposal writing for PhD students and staff | August 2010 | A proposal writing training course took place in July 2012 at Bunda College of Agriculture with support from IDRC grant and Food Security Center. The training was facilitated by Prof Lily Ann D Land from Philippines. The objectives of the training were to 1. Enhance participant’s skills in proposal development and writing especially towards developing proposals for their PhD dissertations. 2. Enhance skills of participants in communication their proposals especially in presenting finds (Annex 6 Proposal writing training report) | 13 IDRC grantees were part of the training at Bunda College of Agriculture and training report was compiled | Increased Institutional capacity in developing proposals for funding. Not only did the meetings involved students but also in attendance were the university staff and other PhD students at the respective universities who were also equipped with skills in proposal writing and literature analysis hence strengthening the capacity of the entire institution Increased resources for skill enhancement courses. Partnerships were established with Food Security Center and other joint initiative with Nepad San Bio Region based in Bunda which contributed to scientific data management courses. Also as a result of this training, students leveraged some additional funding from other organizations to support some aspects of their research that required a lot of resources. For example two of the students under the PhD Agriculture Resource Economics secured funding from IFPRI. **A proposal drafted by students at this**
| Training on M&E for all awardees and selected staff | July 2011 | The training was conducted to provide an understanding of M&E Concepts related to agricultural research and build technical comprehension of planning and monitoring methodologies, particularly results-oriented approaches to planning and management, basic Logical Framework concepts; to introduce evaluation fundamentals, focusing on the planning and monitoring phases while illustrating how they are linked to evaluation, performance management vehicles; and to build capacity and skills of the participants in planning and monitoring, in particular the formulation of objectives and indicators, and setting targets. The main objective was to |
| meeting on Agribusiness was subsequently submitted to ACP-EU Edulink II and approved for funding (Euro $500,000) with one of the trainees as the Principal Investigator – Patience Mushenga. | M&E training conducted and at least 28 IDRC grantees were trained. |
| | | • Training reports documented |
| | | Strengthened analytical capacity in research for impact by students/grantees |
| 15 | Scientific Data Management Training | **July 2011**  
**November 2011**  
**September 2012** | Three Scientific Data management trainings were conducted in July 2011 at Royal Suites in Uganda, November 2011 at Bunda College of Agriculture in Malawi and September 2012 at Imperial Botanical Beach Hotel in Uganda. These were training series that were delivered in phases building on one another. The main objective of the scientific data managements training series was to equip PhD students with the skills and knowledge in software use (GenStat and SPSS) in data management, analysis and presentation of results in a format that would ensure their wide dissemination as peer reviewed publications and policy formulation.  
A total of 41 students participated in the training; out of these **28 were IDRC supported students**. The training combined RUFORUM supported and IDRC supported beneficiaries to ensure cross fertilization of ideas as well as building up initial linkages and future collaboration among students.  
A workshop report was submitted to RUFORUM. | The training participants comprised of the students from diverse backgrounds and multi-disciplinary of students across the region. As such it allowed them to initiate collaboration and sharing of experiences/ lessons in the context of a changing agricultural development landscape. |
|---|---|---|---|---|
| Training in Scientific writing for all awardees, targeting publishing students results | July 2011 | The training was held in Uganda at Royal Suites hotel. The aim was to help students to appreciate different styles of writing articles targeting different journals, understand various reasons why manuscripts are accepted or rejected by journal reviewers and appreciate the quality control process in journal review and editing *(Annex 8: Journal publishing training report)* | • 15 IDRC students trained. This excludes the Sokoine University grantees  
• Training reports on Publishing Journals submitted to RUFORUM | Increased human capacity and enhanced skills and understanding of the purpose of developing journal articles in scientific writing and peer reviewed publications.  
Enhanced confidence in research articulation technique which has improved acceptance rate of published papers submitted by the grantees to international journals  
Already, articles published in peer reviewed journals as indication if quality research outputs |
| 11 | Internal review of progress | November 2011 | The meeting was held at Bunda College of Agriculture in Lilongwe. It provided a platform to review project progress as well as sharing lessons and experiences among the PhD students, fresh PhD grantees and coordinators. During this meeting students were requested to share and discuss their experience and suggestion for improvement of the programmes in terms of research, supervisor, performance and assessments *(Annex 9: Lesson sharing report)* | • Lesson sharing report documented.  
• SWOT analysis documentation for the programmes  
**26 were the IDRC supported students** participated  
Extended abstracts from PhD students and Guest speakers being reviewed for publication in RUFORUM working Documents; with summaries in both English and French  
Staff Back to Office Report | Partnerships are being developed among the researchers. Already the grantees from the three universities, identified areas of interest for their future research and collaboration.  
Feedback is being used to guide implementation of Regional graduate programmes |
| Attendance of conferences by PhD students and their staff | September 2010, October 2011, September 2012 | One of the requirements of the grant was that each grantee to attend one scientific conference to actively exchange findings and experiences, while at the same time learning lessons towards improving performance of the agricultural sector and ultimately people’s livelihoods. During the project implementation, three scientific conferences were identified which were RUFORUM 2nd Biennial Conference held in September 2010 at Imperial Resort Beach Hotel in Uganda, African Crop Science Society held in Maputo in October 2011, and RUFORUM Biennial held at Imperial Resort Beach Hotel in 2012. The grantees attended one of the three depending on the stage of their research work. At least the condition was that each one should present some preliminary results. These Scientific conferences are the most comprehensive meetings for

- A team of experts met with individual students to give feedback and mentor them on the research
- A total of twenty eight abstracts were received from the RUFORUM-IDRC Supported candidates by the local Organizing committees of three conferences


The entire process enhanced the students’ confidence in sharing the research results at public scientific gathering.

Interaction platform for the grantees and other stakeholders created
the diversity of stakeholders in agriculture. They are especially dedicated to graduate students and their supervisors, grantees in African universities and alumni. They also serve as a platform for peer review, quality control, mentorship, and networking and shared learning. The mentorship is mainly done through


14. Graduation of students and submission for final report to RUFORUM Board and IDRC

By the end of 2011, some students had already started graduating mainly those from University of Nairobi programme. In 2013, we expect 90% of the students at Bunda College in the two programmes to complete and graduate. At the moment these students have made a considerable progress. Some have their thesis sent for external examination while others are still working with their supervisors.

Theses papers submitted and approved by the University Journal Manuscripts were submitted; some are already published and others waiting for peer review comments.

http://repository.ruforum.org/

Increased institutional capacity and human/experts capacity in the natural resource management specifically in the areas of Dry land Resource Management, Agricultural Resource Economics, Soil and Water Management and Aquaculture and Fisheries Sciences.

Some of the graduates have already been identified as resource persons and are supporting some of the skill enhancement courses like scientific data management and proposal writing courses.

A Community of Practice has
| (Annex 11 copies of publications in International Journal) | RUFORUM has been collating the publications from the grantees with a purpose of sharing and making these easily and widely accessible through the RUFORUM repository which has just been launched | emerged, through various regional networking opportunities provided by the IDRC grant support, and some of the students and faculty so linked have already formed teams to develop collaborative research proposals. The links have also broadened the network of expertise that researchers can easily call on and has helped contribute to building a critical mass for the national and regional research systems |
5.0 Overall assessment and recommendations

The main objective of the project was to build research capacity in natural resource management to enhance agricultural productivity and food security in the Eastern, Central and Southern Africa region. This was to be achieved through a Competitive Grants System (CGS) by providing 28 research fellowships, training in skill enhancements training courses as well as publishing at least one peer-reviewed journal article and conference paper. As such, the completion of the project has allowed most of these objectives to be achieved. In summary, a total of 28 research grants were awarded and out of these, 12 students have graduated, 16 students are soon to graduate, having submitted their theses and are in the process of examination, correction and preparing more research papers. The 12 PhD graduates have returned to their home countries and reported back to their Institutions. Most of them came from the universities. The grantees have been submitting their research dissemination papers as part of sharing their research results and integrating back into their home country research systems, contributing to the project’s goal of building capacity to develop research and training capacity.

Additionally, multidisciplinary research trainings were conducted in areas of proposal writing, Journal Publication, Scientific Data Management and Monitoring and Evaluation Methods. There is no doubt that the project has enhanced the skills of the students both through the short skills training and mentorship received from the supervisors. The students were able to focus their research areas and align them to the development goals e.g. food security, market access and natural resource conservation hence building the future critical pool of scientists in the national and international priority areas of importance.

At RUFORUM level, one important outcome from the implementation, lessons learnt among others from the IDRC grants, was the birth of RUFORUM competitive Doctoral Grants (DoGs) which has now been incorporated in the competitive grant scheme.

Globally, the project helped to demonstrate that African Universities are able to conduct and offer quality PhD training within three years. Furthermore, the project has contributed to the building of the scientific knowledge base. Already, over 30 research publications (all available at the RUFORUM website - www.ruforum.org) have been generated and more are anticipated. The number of the publications reflects a steady increase in contribution of African institutions to global knowledge and provides evidence for supporting policy for improving agricultural productivity in Africa. For instance, two policy papers were emerged from Dr Horace Phiri’s thesis (PhD Agriculture Resource Economics – Bunda College in Malawi) one titled Neopatrimonialism and Agricultural Protection. The Second paper is Political Economy of Producer Support in Malawi. The author has published these papers in the International Food Policy Research Institute policy publications bulletin (papers are attached for reference).

Some of the papers that emerged from the grantees have also been shared at various scientific gatherings, including at the December 2011 Durban COP 17 meeting. In due course, all the finalized theses will also be made widely available through links on the RUFORUM website and Institutional Repository.

Usefulness in achieving project objectives through partnerships

In implementing the skill enhancement courses, RUFORUM partnered with some institutions with similar initiatives in the RUFORUM member Universities. Some of these were the African Crop Science Journal, which facilitatied proposal writing and scientific publication. Also, Food Security Center – Jointly implemented a proposal writing workshop and NEPAD San Bio – Jointly implemented a Scientific Data Management training. These Scientific Data Management training was facilitated by a team of experienced research methods specialists.
At individual student level, having gone through the rigorous writing and submission of concept notes for IDRC grants, proposal writing training and skills, students became proactive to mobilize extra funding to top up their research work. Some of the funders were International Foundation of Science, Food Security Center and Association for African Universities. Especially noteworthy is that one of the team proposals developed by the students during their proposal writing training was this year approved for funding the ACP-EU Edulink II call. The grant will allow the research team to work across 4 universities and countries; Egerton University in Kenya, Mekelle University in Ethiopia, University of port Harcourt in Nigeria, and Gulu University in Uganda.

**Effectiveness of dissemination activities**
The dissemination plan included development and circulation of several awareness communication materials to inform stakeholders about the project achievements and outputs. These dissemination facilities were successful not only in informing the stakeholders but also maintaining the accountability and transparency of the project. The communication materials included;

- Brochures
- RUFORUM monthly newsletters
- Construction of a page on RUFORUM Website with descriptions of the project, its results
- Project Exhibition at Scientific conferences

**What would have been done differently, what general and useful lessons can be derived for improving future projects**

- Need for provision for no cost extension. During the implementation we realized that capacity building activities can take long than expected as such it is important to plan for additional no cost extension period to allow successful completion of the projects.
- There was limited interaction between RUFORUM and IDRC contact persons through annual lesson sharing and learning meeting. As such the engagement of the two parties during the implementation was rather weak. In future, there is need for regular and active engagement in order to maximize learning from the implementation and increase efficiency of implementing the project.
- The doctoral project agreement overlooked the costing of staff managing the project at RUFORUM secretariat. During the implementation, it was clear that the work involved in implementing the project required significant time for close supervision and progress checking. As a result RUFORUM heavily invested in terms of staff time.
- As reported in the previous reports, the process of managing the fellowships did not have strong and strict in-built mechanisms/rules for deterring fellowship holders from abandoning the grant and programme of study without having to payback what had already been spent on them. Therefore, in future, RUFORUM and IDRC will need to detail these processes and each student will have to sign and accept before taking up the scholarship.
## Status of the each grantees under the four targeted regional PhD Programmes

**PhD Dry land Resource Management University of Nairobi, Kenya**

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Gender</th>
<th>Status</th>
<th>Research Topic</th>
<th>Titles of The Journal Articles Published and Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melusi Moyo</td>
<td>Zimbabwe</td>
<td>M</td>
<td>Thesis submitted</td>
<td>Tillage effects on soil moisture, crop growth and soil organic carbon in a cereal legume strip intercropping in semi-arid conditions</td>
<td>Journals papers have been published but the student is yet to share with RUFORUM</td>
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</table>
• A S Nalule, J M Mbaria*, D Olila** and J W Kimenju 2011 Ethnopharmacological practices in management of livestock helminthes by pastoral communities in the drylands of Uganda Livestock Research for Rural Development 24 (8)  
<p>| Emmanu el Zziwa | Uganda  | M      | Graduated  | Impact of land use and cover change on soil quality and | The following titles have been developed into manuscripts and submitted for Journal Publication. The student is yet to share the link for the publication |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Gender</th>
<th>Status</th>
<th>Title</th>
<th>Publication Details</th>
</tr>
</thead>
</table>
| Kudra Abdul   | Tanzania  | M      | Graduated| Influence of soil fertility management on Striga seedbank dynamics and grain yield of sorghum in semi-arid areas of Tanzania | The following titles have been developed into manuscripts and submitted for Journal Publication. **The student is yet to share the link for the publication**
  1. The influence of different sources of fertilizer on Striga reproduction and sorghum grain yield
  2. Physico-chemical characteristics of Striga infested soils and their influence on Striga reproduction |
| Elias Otieno  | Kenya     | M      | Graduated| Modeling climate related index-based risk transfer products to enhance pastoralists resilience in the dry lands | The following titles have been developed into manuscripts and submitted for Journal Publication. **The student is yet to share the link for the publication**
  1. Factors influencing Pastoralist Communities Vulnerability in Group Ranches
  2. Conceptualization and measurement Challenges: Modeling Risk and Vulnerability |

Debela Hunde Feyssa

Ethiopia M Graduated

A comparative analysis of use of wild edible plants on food security among Transhumance and Settled Farmers in Semi-arid East Shewa, Ethiopia


- Debela Hunde Feyssa, Njoka, J.T., Zemede Asfaw & Nyangito, M.M 2010 Analysis of multipurpose uses and management of Zizphus spina-christi (L.) desf. in semi-arid Ethiopia: Implications for food security Second RUFORUM Biennial Meeting
<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Country</th>
<th>Gender</th>
<th>Graduated Status</th>
<th>Research Focus</th>
<th>Published Publications</th>
<th>Additional Information</th>
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<td></td>
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<td>Proceedings</td>
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**PhD Agriculture resource economics Lilongwe University of Agriculture and Natural Resources, Bunda College, Malawi**

<table>
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<tr>
<th></th>
<th>Name</th>
<th>Country</th>
<th>Gender</th>
<th>Graduated Status</th>
<th>Research Focus</th>
<th>Published Publications</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>1</td>
<td>Hellen Kongai</td>
<td>Uganda</td>
<td>F</td>
<td>Submitted for Examination</td>
<td>Analysis of the citrus value chain, market access and supply response in the Kyoga Plains Agricultural Zone in Uganda</td>
<td>The student is completing thesis write up and currently developing journal articles for submission</td>
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<tr>
<td>2</td>
<td>Irene Nambuya Musebe</td>
<td>Kenya</td>
<td>F</td>
<td>Submitted for Examination</td>
<td>Assessing the impact of climate change and vulnerability on food security in Kenya</td>
<td>The student is completing thesis write up and currently developing journal articles for submission</td>
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<td>3</td>
<td>Vincent Ekiyar</td>
<td>Uganda</td>
<td>M</td>
<td>Submitted for Examination</td>
<td>The impact of climate change and variability on agricultural production: Adaptation strategies in Teso Sub-region of Eastern Uganda</td>
<td>The student is completing thesis write up and currently developing journal articles for submission</td>
<td></td>
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<tr>
<td>No.</td>
<td>Name</td>
<td>Country</td>
<td>Gender</td>
<td>Status</td>
<td>Research Focus</td>
<td>Thesis Title</td>
<td>Journal/Publication Details</td>
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<tr>
<td>1</td>
<td>Alexandre Kefi</td>
<td>Zambia</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Influence of dietary protein and lipid combination and androgen (17 α – methyl testosterone) levels on the growth and reproduction of Oreochromis</td>
<td>A.S. Kefi, J. Kang’ombe, D. Kassam and C. Katongo <em>2012 Effect of Dietary Soyabean (Glycine max (L.) Merr.) Protein Level on Growth and Feed Utilization of Oreochromis andersonii</em> (Castelnau, 1861) Pakistan Journal of Nutrition 11</td>
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<tr>
<td>5</td>
<td>Mirau Mbise</td>
<td>Tanzania</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Transaction costs and food security: a case of maize marketing in the southern highlands of Tanzania</td>
<td>The student is completing thesis write up and currently developing journal articles for submission</td>
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<tr>
<td>6</td>
<td>Boniface Kakhobwe</td>
<td>Malawi</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Economic efficiency and productivity of conservation agriculture in Malawi: A case of Nkhotakota District</td>
<td>The student is completing thesis write up and currently developing journal articles for submission</td>
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<tr>
<td>7</td>
<td>Horace Phiri</td>
<td>Malawi</td>
<td>M</td>
<td>Graduated</td>
<td>The analysis of the agricultural policy processes in Malawi</td>
<td>The student graduated Two policy briefs produced and published in the IFPRIs policy bulletin</td>
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<tr>
<td>8</td>
<td>France Thapasila</td>
<td>Malawi</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td></td>
<td>The student is completing her thesis write up and currently developing journal articles for submission</td>
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**PhD Aquaculture and Fisheries Sciences, Lilongwe University of Agriculture and Natural Resources, Bunda College, Malawi**
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Country</th>
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<tr>
<td>2</td>
<td>Joshua Valeta</td>
<td>Malawi</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Hatchability Assessment and Hatchery System Adaptation for Oreochromis karongae (Trewavas, 1941).</td>
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<tr>
<td>3</td>
<td>Alexandre Bulirani</td>
<td>Malawi</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Population dynamics and changes in population structure of four most abundant fish species of the south east arm of Lake Malawi</td>
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<tr>
<td>4</td>
<td>Albert</td>
<td>Zambia</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Epidemiology of Epizootic</td>
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4. Kefi, A. S1., Kang’ombe, J1., Kassam, D1 and Katongo C2 Effect of 17 α – methyl testosterone on haematology and histology of liver and heart of oreochromis andersonii
<table>
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<tr>
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<td>Leston Yoyola Phiri</td>
<td>Malawi</td>
<td>M</td>
<td>Submitted the thesis for Examination</td>
<td>Value chain analysis of Lake Malawi Fisheries: A case study of Oreochromis karongae (Chambo)</td>
<td>• Letson Yoyola Phiri1, Joseph Dzanja, Tasokwa Kakota and Mafanizo Hara 2012 Value Chain Analysis of Lake Malawi Fish: A Case Study of Oreochromis spp (Chambo)</td>
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**PhD Soil and Water Management, Sokoine University of Agriculture, Tanzania**

<table>
<thead>
<tr>
<th>Name</th>
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<th>Gender</th>
<th>Status</th>
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<tr>
<td>Msolini Barnabas</td>
<td>Tanzania</td>
<td>M</td>
<td>Finalizing data collection and analysis. The student is now writing the thesis</td>
<td>An Assessment of the impact of climate variability and change on rain-fed Sorghum in semi-arid central Tanzania: “Physics and Chemistry of the Earth” journal.</td>
<td>Draft manuscript- “Understanding sorghum yield response to variable and changing climatic conditions in semi-arid central Tanzania: “Physics and Chemistry of the Earth” journal.</td>
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<tr>
<td></td>
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<tr>
<td>2</td>
<td>Dorwin Singa</td>
<td>Malawi</td>
<td>M</td>
<td>Finalizing data collection and analysis. The student is now writing the thesis</td>
<td>Modeling of runoff water storage for bean irrigation using parched-thirst model in drought prone ukwe area, Malawi</td>
</tr>
<tr>
<td>3</td>
<td>Frank Mwenechanya</td>
<td>Malawi</td>
<td>M</td>
<td>Finalizing data collection and analysis. The student is now writing the thesis</td>
<td>Development of a Decision Support Tool for Designing of Controlled Drainage and Subirrigation in Dambos of Central Malawi</td>
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<tr>
<td>4</td>
<td>Anne Nyambura Karuma</td>
<td>Kenya</td>
<td>F</td>
<td>Finalizing data collection and analysis. The student is now writing the thesis</td>
<td>Evaluation of selected combined in-situ rainwater conservation tillage practices on maize production in Mwala district, Kenya</td>
</tr>
<tr>
<td>5</td>
<td>Tolera Abera Goshu</td>
<td>Ethiopia</td>
<td>M</td>
<td>Finalizing data collection and analysis. The student is now writing the thesis</td>
<td>The student completed all his course work. He is back to his home country where he is collecting data for his thesis research.</td>
</tr>
</tbody>
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