

Research Application Summary

Building capacity of African Universities to train proactive graduates through partnerships: The case of RUFORUM and Carnegie

Uwituze, S., Chindime, M.S., Osiru, M. & Adipala, E.
Regional Universities Forum for Capacity Building in Agriculture, P. O. Box 16811, Wandegaya,
Kampala, Uganda
Corresponding author: s.uwituze@ruforum.org

Abstract

Africa is currently last in all the knowledge economy indicators yet growth and development in a globalized world are driven by a knowledge economy. Although Africa demonstrated strong economic performance during the last decade, with at least 4.5% GDP growth, extreme poverty has grown with number of poor increasing dramatically over the past 15 years. With only 20% of academic staff having PhDs in public higher education institutions in Africa, universities face difficulties in serving local needs and responding to the market demand in order to reduce poverty. Accordingly, universities need to harness higher education partnerships so as to address the current inadequacy for higher education systems in Africa and help universities provide quality training, particularly at graduate (Masters and Doctoral) level and to harness regional, continental and global lessons and experiences. The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a network of 60 universities in 25 African countries, has partnered with Carnegie Corporation of New York in a bid to strengthen the capacity for graduate training in African universities. Under this partnership Carnegie has provided two grants (the first \$997,900 and the second \$1,505,400) to support training of PhD students in selected regional PhD programmes in Africa. To date, 114 scholarships have been awarded, and already 29 students have completed their PhD training and returned to their home institutions. This paper highlights key achievements of this 5-year partnership, draws some lessons learned from implementation, and suggests possible future orientation for the partnership and other initiatives.

Key words: Academic mobility, Carnegie, doctoral training, RUFORUM

Résumé

L'Afrique est actuellement dernière dans tous les indicateurs de l'économie de la connaissance alors que la croissance et le développement dans un monde globalisé sont entraînés par une économie de la connaissance. Bien que l'Afrique ait démontré une forte performance économique au cours de la dernière décennie, avec une croissance du PIB d'au moins 4,5%, l'extrême pauvreté a augmenté avec le nombre de pauvres augmentant considérablement au cours des 15 dernières années. Avec seulement 20% du personnel

enseignant dans les établissements publics d'enseignement supérieur en Afrique ayant des doctorats, les universités éprouvent des difficultés à servir les besoins locaux et à répondre à la demande du marché afin de réduire la pauvreté. Par conséquent, les universités ont besoin de s'engager dans des partenariats d'enseignement supérieur afin de faire face à des lacunes actuelles des systèmes d'enseignement supérieur en Afrique et aider les universités à offrir une formation de qualité, en particulier aux cycles supérieurs (maîtrise et doctorat), et de profiter des leçons et des expériences régionales, continentales et mondiales. Le Forum des Universités Régionales pour le Renforcement des Capacités en Agriculture (RUFORUM), un réseau de 60 universités dans 25 pays africains, a établi un partenariat avec Carnegie Corporation de New York dans le but de renforcer la capacité de formation de troisième cycle dans les universités africaines. Dans le cadre de ce partenariat Carnegie a fourni deux subventions (le premier équivalent de 997,900 \$ et le second équivalent de 1,505,400 \$) pour soutenir la formation des étudiants en doctorat dans les programmes de doctorat régionaux sélectionnés en Afrique. Aujourd'hui, 114 bourses ont été attribuées, et déjà 29 étudiants ont terminé leur formation doctorale et sont retournés à leurs institutions d'origine. Ce document présente les principales réalisations de ce partenariat de 5 ans, dégage quelques leçons tirées de la mise en œuvre de ce projet, et suggère une future orientation du partenariat et d'autres initiatives.

Mot clés : la mobilité académique, Carnegie, la formation doctorale, RUFORUM

Introduction

Africa is currently last in all the knowledge economy indicators yet growth and development in a globalized world are driven by a knowledge economy (World Bank, 2012). Although Africa demonstrated strong economic performance during the last decade, with average GDP growth at over 4.5%, extreme poverty has grown with the number of poor increasing from 280 million in 1990 to 330 million in 2012 (World Bank, 2016). Without effective capacity that is relevant to local realities and able to take advantages of modern technologies and communication, Africa will not be able to achieve the Sustainable Development Goals (SDGs), sustain its own growth goals, or position itself to benefit more fully from its natural resources. There are considerable gains to be made from investing in higher education to meet the high level skills gap in all African economies and to meet the anticipated increase in demand as a result of the massive expansion in basic education (Larsen, 2016).

Impacting African rural farm based communities, which form the majority of Africa's population, requires renewed strategies underpinned by a new cadre of professionals who are able to understand changing contexts, including the challenges and constraints that rural farmers face. According to Gibbons *et al.* (1994), "*Enhancing the capacity to manage change amidst a myriad of problems requires a new cadre of change agents who are capable of visioning, strategizing, empathizing, mobilizing, training, and empowering people to take charge of their destiny*". Thus, Higher Education Institutions are expected to be more responsive to development needs and to serve diverse needs of growing economies. In response to this call, a multitude of African universities have been established in the last four decades but most are grappling with quality issues, inadequate resources,

weak curricula, and inadequate contributions to national development aims (Materu, 2007). Only a few are able to offer quality graduate programmes especially at PhD level. In fact, according to the 2010 Global Research report, only 20% of academic staff has PhDs in public higher education institutions in Africa (Adams *et al.*, 2010). Strengthening capacity for PhD training in Africa is therefore urgent since it has a “full effect” for improving delivery of the educational sector at all levels (basic, secondary, and tertiary education; Blackie, 2016).

Tackling these problems requires fostering and strengthening strategic alliances among African Higher Education Institutions, and with other actors within and outside the continent. Higher education partnerships address the current inadequacy for higher education systems in Africa especially, in terms of providing quality training, particularly at graduate (Masters and Doctoral) level and harnessing regional, continental and global lessons and experiences (Ngamau, 2011; Moock, 2015). As a result, a number of training programmes and approaches, involving sandwich model, full time training in advanced countries and other models are being implemented in Africa, resulting in human resource development at MSc. and PhD levels (Materu, 2007).

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a network of 60 universities in 25 African countries, works with its member universities to deliver innovative and responsive post-graduate degree programmes and research as an alternative to studying abroad (Okori, 2015). Accordingly, the Network has designed joint regional MSc. and PhD programmes that are hosted in selected universities on behalf of the Network. The students and faculty are drawn from the Network universities and beyond. RUFORUM Regional Programmes are designed to ensure that they produce graduates who are relevant to African rural development context and have the soft skills and commitment needed to lead the transformation by introducing a new way to facilitate learning, access information, and interact with stakeholders (Okori, 2015). Partners such as Carnegie Corporation of New York are helping RUFORUM in the strife to equip its member universities with necessary skills and knowledge to produce relevant fit-for-purpose graduates.

Description of the RUFORUM-Carnegie partnership

In 2012, RUFORUM entered into a three year agreement with the Carnegie Cooperation of New York to support African Universities to build their own training capacity by strengthening doctoral programmes and ensure that they have adequate qualified faculty staff with PhD degrees. The project aimed at producing leaders rooted in African realities and able to solve the problems of the poor in ways that lead to sustainable uptake and growth, supported by enlightened policies. Specifically, the grant provided opportunities for university staff and African scientists to enhance their qualifications by enrolling in doctoral programs that are based within Africa (Chindime *et al.*, 2016). A subsequent 2-year agreement was signed in 2015 to address the universities’ quantity gap by increasing the number of faculty with PhDs, the relevance gap areas by ensuring that curricula and research are grounded in local reality; and the quality gap by enabling the best faculty from across Africa teach in the programmes and providing additional training, mentoring and close monitoring, and by working with the universities to revise and update curricula, structure, and pedagogy.

The Carnegie project interventions fall within the following four expected outcomes and Indicators of Achievement:

1. Stronger and more relevant African Regional Doctoral Programmes;
2. Heightened visibility and marketability of the Regional Programmes;
3. Stronger regional social capital; and
4. Improved and more relevant qualifications and capacity of in-service employees, especially academic staff members.

This partnership is in line with the Carnegie Higher Education Programme's efforts to upgrade the capacity of university faculty, to support the required human capital and locally-generated research so important to sustain and expand recent social and economic gains, and increase agricultural productivity and food and nutrition security. It is also well aligned with the RUFORUM's overall mission to enhance the quality and relevance of postgraduate education in Africa.

The RUFORUM-Carnegie partnership achievements

The number of Faculty with PhD Graduates increased. A total of 114 PhD scholarships have been awarded competitively to support 25 participating universities in 14 African countries (Fig. 1). Of 114 grantees, 29 have already graduated (Fig. 2) and have returned to their home to occupy various positions (Fig. 3). Majority of the graduates rejoined universities where most of them have been appointed to senior positions such as Deans of Faculties, Heads of Departments, and Coordinators of Postgraduate programmes, etc. Although this

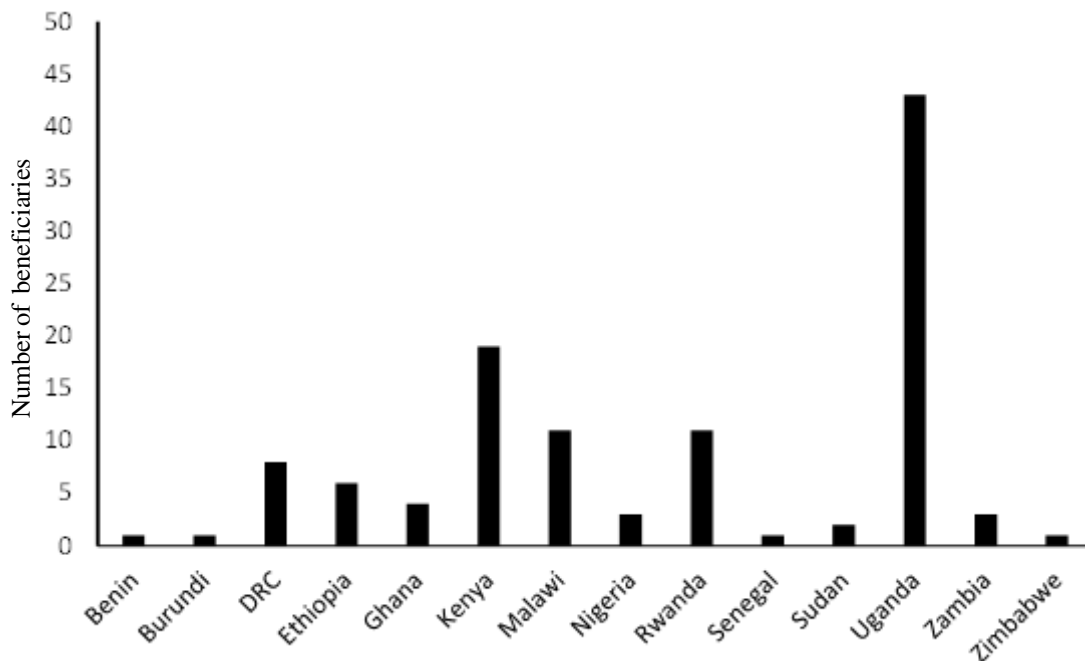


Figure 1. Number of grantees per country

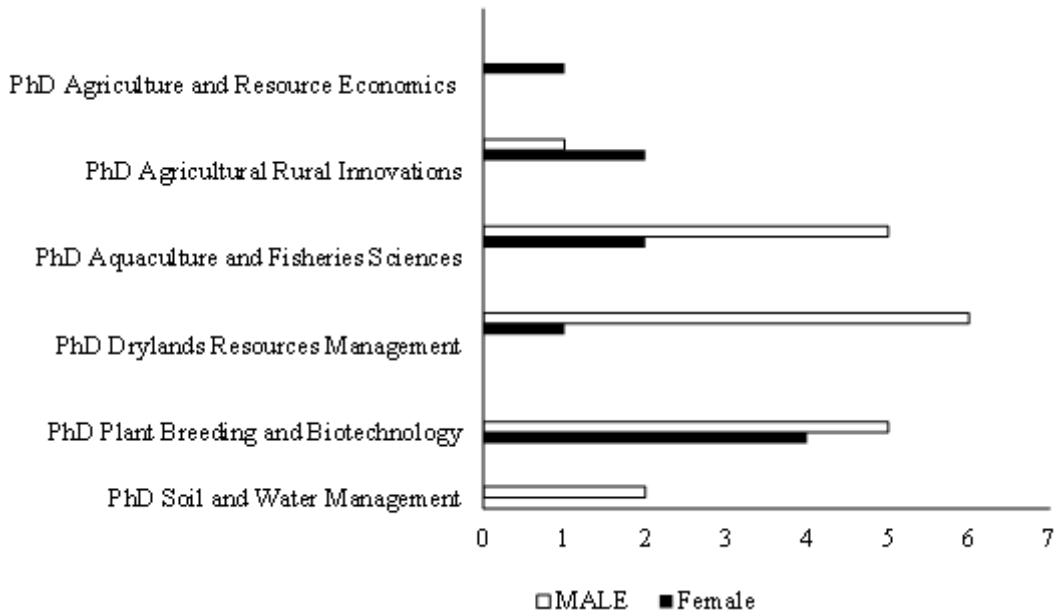


Figure 2. Number of grantees who graduated per training area (Phase I)

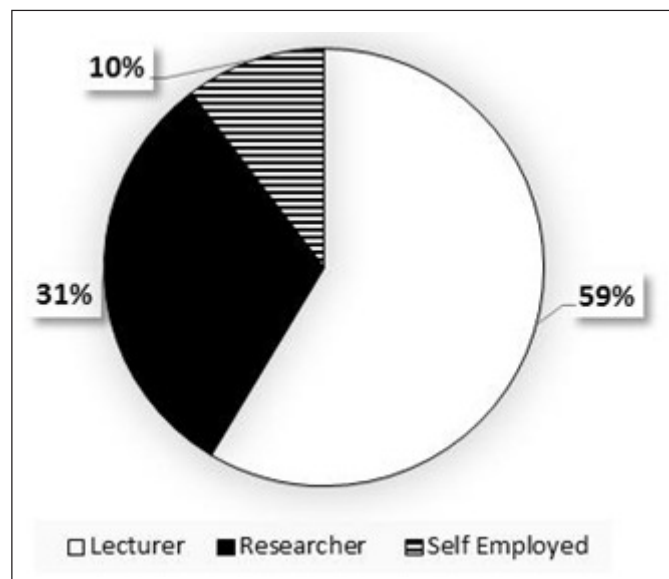


Figure 3. Employment Sector for the 2012 Carnegie awardees who graduated

is great development for our alumni, it also highlights the need to enhance leadership management skills that would help strengthen their performance in their new positions. In the meantime, RUFORUM continues to support them through leadership coaching by its professional community (Okori, 2015). RUFORUM has also joined hands with the African Women in Agricultural Research and Development (AWARD) to offer targeted leadership

and skill enhancement training for especially female researchers and mid-career university administrators (RUFORUM, 2015a). Beginning October 2016, RUFORUM will also work with university Vice Chancellors to run a tailor-made refresher course on university leadership and management.

University relevance improved through revamped curricula, skills enhancement, and research grounded in local reality

A key aspect of the Carnegie-RUFORUM partnership was to put in place means to ensure the relevance and quality of the postgraduate programmes. Accordingly, the following activities were undertaken. The program supported students' skills enhancement both through short skills training and mentorship received from their supervisors. Specifically, students were trained in Proposal Writing, Journal Publication, Scientific Data Management, and Personal Mastery. Curricula were tailored to the market demands and multidisciplinary research trainings were conducted. Students were able to focus their research areas and align them to the development goals; hence building the critical mass to serve in the national and regional agricultural priority areas.

Testimonies from awardees indicate that their confidence in research articulation techniques has been enhanced and this has improved the acceptance rate of published papers submitted to international journals (Chindime *et al.*, 2016). To date 51 scientific papers were published by grantees in peer reviewed journals, and 30 abstracts were presented and featured in scientific international conferences. Publications reflect the increased contribution of African institutions to the global knowledge pool and provide relevant scientific knowledge and evidence for supporting policy reform and practice aimed at improving agricultural productivity in Africa linked to markets and economic growth. All Carnegie awardees' publications and theses are available through the RUFORUM online repository.

Quality of teaching and learning improved through academic mobility and mentoring

The Carnegie supported – programme resulted in enhanced regional cooperation and networking among RUFORUM member universities. Students and faculty had opportunities, through mobility, to learn about various countries and formed close relationships that were consolidated through formal RUFORUM structures and social networking initiatives. For instance, staff exchange visits between Eastern Africa – Western Africa and Eastern – Southern Africa universities created opportunities for universities in Africa to collaborate particularly in terms of strengthening research and visiting lectures; this provided opportunity for faculty cross learning. Through these collaborations, joint proposals were developed for funding by the EU INTRA ACP academic mobility. As a result, an amount of \$10.5 million was raised to facilitate 36 staff exchanges and training of 179 MSc. and 75 PhD students across Africa (Table 1). Such partnerships respond to the need to harness capacities existent in various universities to serve the wider higher education and research sector. It also promotes professional networking across the relevant scientific disciplines and within the private and public sectors to transform African economy into a knowledge-based economy (Blackie, 2016).

Table 1. EU INTRAACP academic mobility programmes resulting from networking events

Project name	Universities per project	Staff exchange	PhD in mobility	MSc in mobility	Website
METEGA ¹	12	8	19	44	www.metega.com
CSAA ²	13	10	19	44	www.csaa-intraacp.org
P4PHT ³	11	8	18	47	www.ug.edu.gh/p4hpt/partners
SHARE ⁴	12	10	19	44	www.asharecap.com
Total		36	75	179	

¹ Mobility to Enhance Training of Engineering Graduates in Africa

² Inter- University Cooperation to Train Crop Scientists for African Agriculture

³ Partnering for Health Professional Training in Africa Universities

⁴ Sharing Capacity to Build Capacity for Quality Graduate Training in Agriculture in African Universities

RUFORUM championed formation of these Intra ACP consortia based on the principle of subsidiarity where “well established” universities build economies of scale and scope and reach out to “emerging” institutions. Moock (2015), noted that the potential of building a strong human capital development infrastructure and harnessing gains from innovation in the research process is enhanced by investment in scientific networks.

Further, six EDULINK projects were conceived through staff exchanges and collaborations that were initiated through a grant supported by Carnegie Cooperation of New York (Table 2).

RUFORUM championed formation of these EDULINK project teams whose short synopses are hereby presented. The PASUFONS project facilitated strengthening of academic collaboration amongst three universities namely Makerere University in Uganda, Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Kenya, and Stellenbosch University in South Africa. The three universities are members of RUFORUM, and are using satellite technology to facilitate virtual teaching. The hardware required for receiving signals was provided by Stellenbosch University and installed at JKUAT and Makerere University in September 2015. Using the telematic system, students at Makerere University, JKUAT, and Stellenbosch University now attend lectures recorded at the Telematic Centre at Stellenbosch University. Arrangements are now underway to jointly offer courses using this facility. In addition to virtual teaching, PASUFONS has facilitated sharing of expertise among partners through staff exchange (Chindime *et al.*, 2016).

Under ADECEA project coordinated by Makerere University, demand driven MSc programmes were developed and piloted by Université d’Antananarivo in Madagascar, Université du Burundi in Burundi, and Université Catholique de Bukavu in DRC; three countries emerging from conflicts. The three RUFORUM member universities are being backstopped by Agreenium and SupAgro-Montpellier in France; University of Ghent in Belgium. Plant Breeding and Biotechnology; Food Science; Environment; Natural Resources

Table 2. EDULINK Projects resulting from networking events

Project name	Grant ID	Website
ADECEA ¹	FED/2013/320-203	http://postconflict-adecea.org/ ; http://www.acp-hestr.eu/content/factsheet-fed2013320-203-2016
AGRIBUSINESS ²	FED/2013/320-100	http://www.acp-hestr.eu/content/factsheet-fed2013320-100-2016
ARIS II ³	FED/2013/320-091	http://www.acp-hestr.eu/content/factsheet-fed2013320-091-2016
Online Networking Platform ⁴	FED/2013/335-687	http://www.acp-hestr.eu/content/factsheet-fed2013335-687-2016
PASUFONS ⁵	DCI-AFS/2013/331-203	www.pasufons.org/ ; http://www.acp-hestr.eu/content/factsheet-dci-afs2013331-203-2016
PhD Aquaculture ⁶	DCI-AFS/2013/320-302	http://www.acp-hestr.eu/content/factsheet-dci-afs2013320-302-2016

¹ Establishing and piloting postgraduate programmes for supporting agricultural development in post conflict countries of Central and Eastern Africa- ADECEA Project

² Strengthening University capacity to enhance competitiveness of agribusiness in Eastern and West Africa

³ Strengthening Human Resource Capacity to Foster Agricultural and Rural Innovation in Eastern Africa

⁴ Deploying Interactive On-line Networking Platform for Improving Quality and Relevance of African University Graduates to Labour Markets

⁵ Partnerships to strengthen university food and nutrition sciences training and research in Eastern and Southern Africa

⁶ Concerted Fit-for-purpose PhD training in aquaculture and fisheries to improve food security and livelihoods in Sub-Saharan Africa

Management; Food Quality and Safety; and Adaptation to climate change were identified as priority training areas to improve food security in three participating countries as well as in Africa¹.

The AGRIBUSINESS project coordinated by Egerton University seeks to “to improve the relevance of agricultural science teaching and outreach to the needs of agribusiness and enhance the collaboration between universities and the private sector”. Through this project, 4 RUFORUM member universities – namely Mekelle University in Ethiopia, Gulu University in Uganda, and University of Port Harcourt in Nigeria – partnered with the University of Copenhagen in Denmark to increase competences of Faculty in terms of Agri-entrepreneurship so as to equip them to teach courses appropriately and build the entrepreneurship skills of graduates. Through this project an entrepreneurship fund scheme was also established to help students develop agri-enterprises as practical hands on training to engage in entrepreneurship activities²

Through ARI II project, three RUFORUM member universities- Makerere University, Egerton, and Sokoine University of Agriculture are Jointly running a Regional PhD Programme in Agricultural Rural Innovations in partnership with Wageningen University and Research Centre in the Netherlands, Agreenium in France, and University of Copenhagen in Denmark. The programme is being offered both on site and online to offset the cost of students and staff mobility³

The On-line Networking Platform project is coordinated by Egerton University which partners with JKUAT, Makerere, RUFORUM, and Agrinatura in Europe to increase interaction between academic world and labour market through an innovative interactive online networking platform, thus improving the relevance of universities in communities. The project involves several associate partners representing various segments of the agriculture sector.⁴

Lilongwe University of Agriculture and Natural Resources (LUANAR), a regional node for training in aquaculture and fisheries sciences, is partnering with Makerere University, University of Eldoret (formerly a constituent college of Moi University), and Rhodes University to run an innovative RUFORUM Regional PhD programme in in Aquaculture and Fisheries⁵

¹ <http://www.acp-hestre.eu/content/factsheet-fed2013320-203-2016> accessed on 14/9/2016

² http://www.acp-hestre.eu/sites/default/files/upload_document/Edulink-320-100%202016.pdf accessed on 14/9/2016

³ http://www.acp-hestre.eu/sites/default/files/upload_document/Edulink-320-091%202016.pdf accessed on 14/9/2016

⁴ http://www.acp-hestre.eu/sites/default/files/upload_document/Edulink-335-687%202016.pdf accessed on 14/9/2016

⁵ http://www.acp-hestre.eu/sites/default/files/upload_document/Edulink-320-302%202016.pdf accessed on 14/9/2016

Reflections on project achievements and challenges

Success factors and benefits

- i. The regular interaction among the beneficiaries, RUFORUM, and the Carnegie officials on the project implementation was very critical to the success of the project. This regular communication fostered trust, confidence, and ownership of the project by the grantees and RUFORUM.
- ii. RUFORUM strives to train graduates who are relevant to the needs of the community. Thus, more exposure and mentoring opportunities are required for students to network with regional and international professionals and connect with potential mentors and collaborators. This will help them define a clear path for their career and engagement at home institution.
- iii. Mobility approach is increasingly becoming popular and has potential to provide quality education, research, and regional integration across Africa through internationalisation and opening up of Programmes. Nevertheless, to effectively harness this need African universities should put in place measures for quality assurance and credit accumulation equivalence and transfer modalities.
- iv. Training with regional scientific and thematic networks is an important way to ensure that students have adequate support locally and regionally. This approach also can build professional communities of practice that have wider knowledge and experience with the continent development needs. It also ensures regional integration.

Challenges

- i. Female participation was below the targeted 50% female recruitment. There were fewer female applicants, constituting only 31% of the applicants. The challenge is not unique to this programme but a general one that RUFORUM has experienced with almost all its training programmes. This could be improved by providing more incentives that take into consideration the needs of women in future grants so as to attract women applicants. It also requires increasing the pool of women MSc students; something RUFORUM has given attention to by raising the number of female MSc students from 4% in 1992 to 8% in 2009, and 46% in 2015 (RUFORUM, 2015b)
- ii. There seems to be unequal ability of applicants to compete for scholarships opportunities. Since most of the applicants were from universities, this is probably reflective of the weakness of some universities in terms of training in proposal writing. This challenge could be overcome by devising a special programme for universities struggling with open competition.

Discussion and conclusion

Studies on higher education and its benefits have demonstrated that increasing access to higher education will have broad impacts on society, including by moulding citizens to participate more effectively in civil programs, improving individual incomes, enhancing nutrition and family wellbeing and strengthening workplace performance and effectiveness

Fifth RUFORUM Biennial Regional Conference 17 - 21 October 2016, Cape Town, South Africa 195
(Larsen, 2016). Moreover, research confirmed higher return rates on investment in higher education (Montenegro and Patrinos, 2013).

Higher education partnerships address the current inadequacy for higher education systems in Africa and help universities to provide quality training, particularly at graduate (Masters and Doctoral) level. Such partnerships enable marshalling human resources residing in different universities in Africa and beyond to strengthen both quality and access to higher education. Moreover, staff and students mobility enhance exchange of ideas and exposure to different settings (Byram and Dervin, 2008).

The Carnegie 5-year grant to RUFORUM contributed to improving the number of University staff with PhDs, enhancing quality training, research relevance, and visibility of African institutions through publications, conference attendance, and academic mobility. Additionally, the support has enabled the strengthening of the RUFORUM network to win further grants from various development partners. Given the success of this partnership, a next step of giving a Post-doc opportunity to the young graduates should be considered by the Corporation and other development partners. There is also still the wider need to escalate doctoral training in the continent to service the increasing demand for staffing at African Universities, research institutions, and other bodies. While each university needs to increase its capacity for PhD training, regional initiatives based on thematic focus such as being done under RUFORUM would enhance access to quality programmes and regional integration.

Acknowledgement

RUFORUM thanks the Carnegie Corporation of New York for its substantial contribution to higher education in Africa. This paper is a contribution to the 2016 Fifth African Higher Education Week and RUFORUM Biennial Conference.

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