

Consortium for Advanced Research Training in Africa (CARTA)

Key messages from CARTA

- CARTA are currently supporting 65 PhD fellows, who to date have produced a total of 48 peer-reviewed publications.
- CARTA have shown a sustained commitment to supporting the researchers through a merit-based funding approach. All partners are involved, via an inclusive and transparent process, in selection of fellows in each cohort. This has led to the assembly of a high quality, highly motivated, multidisciplinary slate of CARTA fellows.
- Improvements in supervision have been realised as a result of tailored training and the establishment of supervision guidelines for their network to standardise practice. Although difficulties remain in incentivising supervisor engagement.
- Engagement of and collaboration among consortium partners increased over the course of the programme. CARTA have also shown progress in networking with other consortia, collaborating with THRiVE around sharing experiences in supporting PhD training and are exploring collaboration with IIDP around supervision guidelines and training. Other collaboration also included SACIDS and SACORE.
- Good progress over the programme to date and increasing visibility contributes to success in securing substantial additional funding. During the project CARTA secured further funding from the Ford Foundation, the Swedish International Development Cooperation Agency (SIDA), the Carnegie Corporation, the British Council, the MacArthur Foundation and Google.

Overview of CARTA

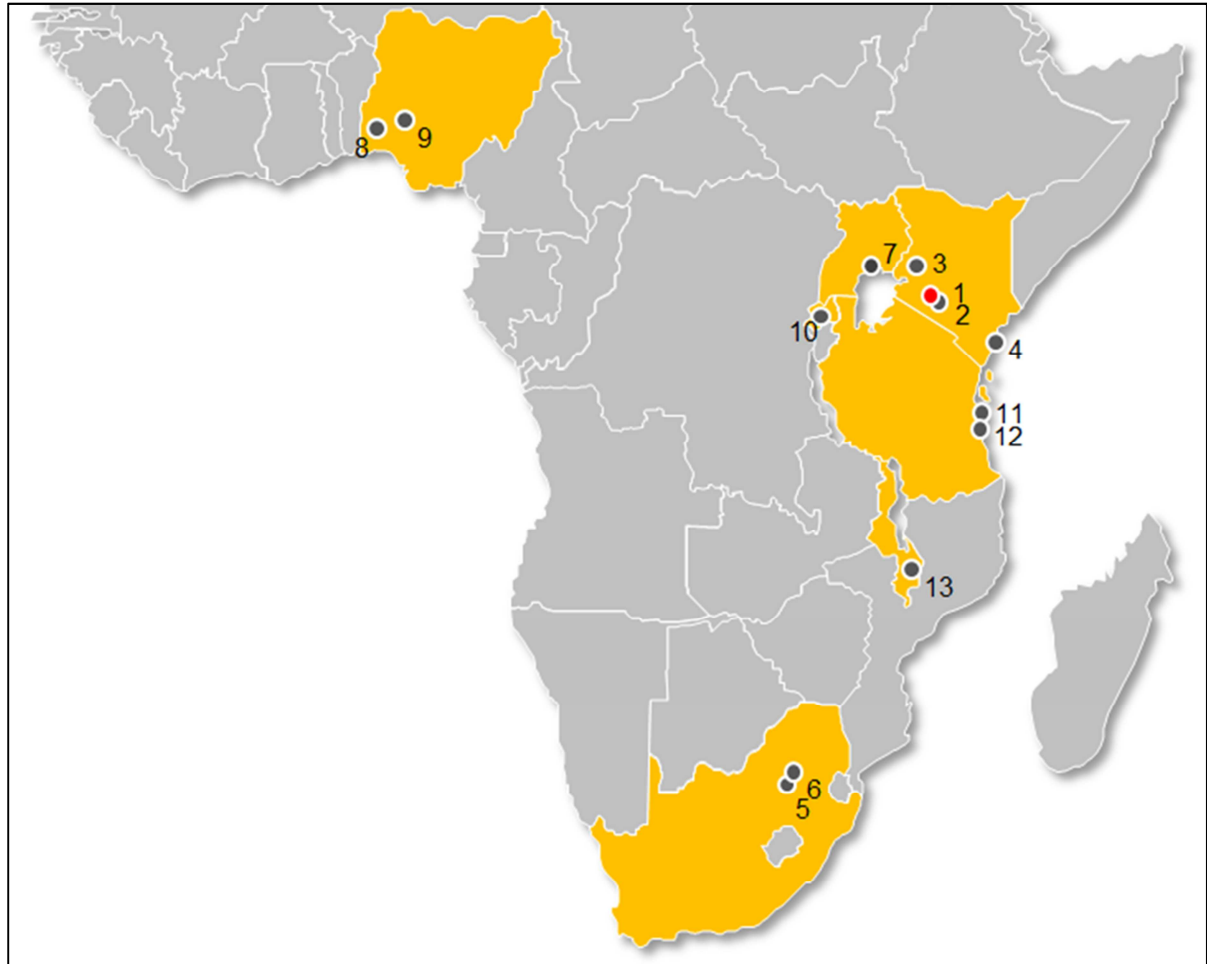
CARTA was established with the goal of promoting the health and well-being of African populations through high-quality research on public and population health priorities. It aims to achieve this via the development of vibrant, multidisciplinary research hubs at African universities, with regional networks of locally-trained, internationally-recognized scholars working together to address major public health challenges. Partners have chosen to address this general goal by focussing on three practical areas of action, described in a recent paper by CARTA members:¹

1. To generate a ‘critical mass’ of internationally competitive academics who are committed to the translation of research into policy, and who can continue to contribute to developing sustainable research capacity in African institutions during their careers.

¹ Ezeh et al (2010). *Building capacity for public and population health research in Africa: the consortium for advanced research training in Africa (CARTA) model*. *Global Health Action* 2010, 5: 5693 - DOI: 10.3402/gha.v3i0.5693.

2. To develop a 'culture of research' among African academics - a vibrant, networked African research community as a pre-requisite for sustainable regional research capacity matched to local health and health research priorities.
3. To develop stronger management, administrative and physical infrastructure within research institutions. This is in order to foster a productive, attractive, efficient and effective environment for developing scholarship and conducting high level research.

Figure 1: CARTA Partners



African Institutions	Northern Partners
1. African Population & Health Research Centre, Kenya (APHRC)	Canadian Coalition for Global Health Research (CCGHR)
2. University of Nairobi, Kenya	Monash University
3. Moi University, Kenya	Swiss Tropical Institute
4. KEMRI/Wellcome Trust Research Programme, Kenya	University of Colorado
5. University of the Witwatersrand, South Africa (Wits)	University of Gothenburg
6. Agincourt Health and Population Unit, South Africa	University of Warwick
7. Makerere University, Uganda	WHO Special Programme for Training and Research in Tropical Diseases
8. University of Ibadan, Nigeria	
9. Obafemi Awolowo University, Nigeria (OAU)	
10. National University of Rwanda (NUR)	
11. University of Dar es Salaam, Tanzania	
12. Ifakara Health Institute, Tanzania	
13. University of Malawi (UNIMA)	

CARTA's theory of change

CARTA has developed a strategic framework and guiding tenets to focus their efforts and target resources appropriately. The consortium brings together partners with a history of collaborative research on public and population health, and is also expanding networks by engaging with strategic partners (individuals and organisations), and by sharing existing contacts and links across the consortium. It has a mix of both established and promising Universities and also includes established research institutes across the continent. The assumption behind this partnering approach is that building on established relationships will contribute to the sustainability of the consortium. At the same time, expanding this network is designed to maximise the scale of potential impacts from CARTA activities across Africa. In addition, the range of institutions bring with them existing tangible (e.g. physical resources) and intangible (e.g. intellectual capital) resources which can be leveraged through the CARTA programme. The Northern partners also bring access to a greater pool of (for example) experienced supervisors and existing course material that will increase the efficiency and effectiveness of the programme.

The impact of CARTA doctoral training is not confined to the total number of PhD fellows supported directly; the intervention logic articulated by one of the consortium members is that there is a 'multiplier effect'. That is to say that every additional staff member with a PhD will be capable of supervising between one and four (potentially more) PhD students at the same time. This is a key factor in building critical mass at all levels of PPH research.

The overall intervention logic for CARTA is that funding multidisciplinary research in a number of different research institutes will increase critical mass and contribute to a sustainable long-term research capacity. This will help to develop interventions that improve health outcomes in the region.

Consequently, the consortium brings together researchers, research groups and departments with a mix of common and unique disciplinary and professional backgrounds.

CARTA has a focus on building networked and skilled researchers who have a commitment to working in sub-Saharan Africa through cultivating vibrant multidisciplinary research hubs at a number of African Universities.

At the centre of the CARTA model is the selection of candidates from various disciplines relevant to population and public health. Each cohort of PhD students will be funded through CARTA with the expectation that all CARTA fellows will obtain a PhD (or equivalent) within the period of the 4-year fellowship. A key component of the CARTA training programme will be a set of four residential seminars (Joint Advanced Seminars or JAS) which all CARTA fellows will attend. These seminars will reinforce PhD training with teaching, workshops and hands-on learning and are designed to enhance skills and knowledge in core research areas; and to provide the opportunity for fellows to build networks.

The interdisciplinary nature of the fellows should also foster a collaborative research approach among CARTA fellows and prepare the foundations for future collaborative working. CARTA believe that this approach will also help to create a sustainable research capacity through three mechanisms: first the creation of networks; second by increasing the number of skilled researchers within partner institutions; and third by strengthening the capacity to supervise future PhD students.

In addition to investing in the training of research staff, CARTA will also support the development of both faculty and administrative staff through identifying and sharing good practice in a number of operational areas. These include information management; financial planning and management; effective student supervision; and development of institutional policies and processes. CARTA will hold workshops to facilitate capacity building in these areas. In addition, CARTA will also make seed investments in ICT infrastructure and physical infrastructure.

The rationale for these interventions is that high quality research requires high quality support, governance and facilities. A lack of access to these key enabling functions and facilities can be a factor in low retention of researchers in Africa

CARTA's progress in the first four years

The remainder of this section highlights CARTA's progress against a set of performance indicators in its logic model to date, firstly outlining CARTA's strategy for that indicator, presenting key achievements to date and discussing the enablers and challenges surrounding that theme. The table below presents a summary of the strengths and challenges experienced by CARTA in the first four years of the Initiative.

Table 1 – CARTA’s Strengths and Challenges to date

Strengths	Challenges
<ul style="list-style-type: none"> • Strong leadership that is respected across partners, enabling institutional buy-in • Success in leveraging substantial investments from external stakeholders such as Google, the Ford Foundation, Sida and the Carnegie Corporation • Emerging evidence of improved quality from research fellows, evidenced through number of publications accepted to peer-reviewed journals • Considered balance of merit and equity in funding mechanism for students, effective use of limited resources through partial funding • Evidence of institutional change within partner institutions through the adoption of CARTA products 	<ul style="list-style-type: none"> • Sustaining equal engagement from all partner institutions in terms of participation and representation in CARTA’s activities, given its large size and the diversity of participating institutions • Competing demands on staff time which may limit their involvement in capacity building activities • Ongoing national infrastructure challenges in the region continue to negatively impact use and development of ICT infrastructure • Staff turnover in key positions in the consortium, impacting on CARTA’s activities

Capacity building in scientific skills and careers

CARTA’s intention was to enrol 25 fellows per year, with the aim of having 100 researchers attain PhDs over four cohorts, though only one cohort will have graduated by 2014. While fellows are not mandated to enrol at home institutions (those with which they are directly affiliated), All partners are equal in terms of representation and participation provided an early opportunity for learning, as it soon became clear that partners had not considered tuition waivers for external students. As fees were not included in the consortium’s budget, and fellows registered outside of their home institutions required more financial support², there was a material impact on the consortium’s ability to support fellows. Further, promising partner institutions may not enjoy the full range of spill over benefits if fellows train elsewhere. CARTA managed this issue in the short-term by reducing the number of fellows enrolled in cohort 2 from 25 to 20, and in the medium term by (i) clearly explaining the financial implications of external enrolment to incoming applicants and (ii) slightly adjusting incentives to encourage fellows to stay at home institutions. Intended enrolment was back to 25 for cohort 3. Table 2 below shows the total number of CARTA fellows enrolled in the programme, across each cohort.

² Fellows who enrolled outside their institution were supported through travel grants and in some instances relocation costs

Table 2 – Key quantitative indicators related to funding allocation and the direction of research

Indicators	Total to date
Cohort 1	21
Cohort 2	19
Cohort 3	25

Funding allocation and the direction of research

CARTA’s approach to allocating capacity-building funds is predominantly merit-based, with an emphasis on creating opportunities for PhD students and a relatively broad thematic focus.

The consortium strategy in terms of fellowship allocation transitioned from equity- to merit-based criteria after the first cohort selection, with a view to prioritising the promotion of research excellence. With its broad thematic focus, CARTA invites applications from fellows working in the fields of public and population health research, though a small number of places are reserved for work in the areas of sexuality and reproductive health and rights. While CARTA’s objective of developing a critical mass of African public health researchers has led to a focus on PhD student funding, the programme also provides training to supervisors, current junior faculty and administrators at partner institutions in order to improve the wider research environment of the region.

Key enablers

- Sustained commitment to CARTA’s merit-based strategy for fellow selection resulted in an enhanced pool of junior researchers, with higher levels of motivation and fewer skills gaps noted across cohort 2 and 3 fellows relative to cohort 1 (selected with an equity-based system).
- Open communication, collaboration among partners and transparency in selection criteria also enabled the consortium to adhere to its merit-based strategy. This facilitated partner buy-in to the selection process and successfully mitigated any relational tensions due to asymmetric applicant performance across universities.
- Communicating the emphasis on adherence to programme milestones kept fellows broadly on track and ensured continued high programme quality. CARTA fellows are expected to fulfil certain key requirements over the course of each year and failure to meet these targets had serious consequences, including the suspension of three cohort 1 fellows due to unsatisfactory academic progress. These events were communicated to the wider CARTA community, serving to reinforce fellow focus on achieving milestones and on high quality output. For example, during year three alone 20 publications by cohort 1 fellows were submitted to or published in peer-reviewed journals, seven fellows made conference presentations and five fellows submitted research proposals seeking funding.

- Continent-wide emphasis on higher research standards helped to expand the pool of motivated applicants by endorsing the importance of programmes of this nature. More and more African universities seek to appoint only PhD-holders to lectureship posts.

Key challenges

- A lack of administrative co-ordination between partners resulted in two cohort 1 drop-outs. One fellow left the programme as a result of being unable to gain registration at the University of Nairobi and one due to unwillingness of Makerere University to waive tuition fees for the individual, who was not in full time university employment. Informing prospective fellows of clearly established registration requirements and tuition charges for each possible category of CARTA fellow was also identified as actions that could avoid dropouts for administrative reasons.

Research training

CARTA's annual 3-4 week residential Joint Advanced Seminars (JAS) for fellows form the core of the consortium's training model. Each cohort of fellows will attend a total of four JASs, held at any of a small group of universities specified by the consortium, to discuss and develop research topics and methodologies as well as to network and share ideas. In addition, Inter-JAS Seminars are used by CARTA as a vehicle for building institutional capacity and increasing programme visibility. They take place as part of the key inter-JAS milestone requirements for CARTA students. Finally, a key focus of the CARTA training strategy is also to facilitate the diffusion of its training model to partner institutions. It seeks to achieve this via inclusive communication among partners on curriculum review; fellow, supervisor and administrator feedback on all aspects of the programme and the provision of administrative support. Table 3 below shows the number of JAS and Inter-JAS conducted to date. The programme for JAS has broadly gone according to plan with the final JAS (JAS4) for cohort 1 scheduled for March 2014.

Table 3 – Joint Advanced Seminars and Inter-JAS seminars conducted to date

Cohort	JAS1	JAS2	JAS3	JAS4	Inter-JAS seminars
Cohort 1	March 2011 APHRC	Nov 2011 Wits	July 2013 Ibadan		20
Cohort 2	March 2012 APHRC	Nov 2012 Wits			19
Cohort 3	March 2013 Dar es Salaam				15

Key enablers

- The JAS curriculum review process led to improvements in seminar content and planning, and provided an effective mechanism to incorporate participant feedback into subsequent seminars. Broadly, feedback received resulted in an increased practical component to JAS courses, with more sessions for individual work, incorporation of field visits, and organised social activities. For JAS2 for Cohort 1, fellows had the opportunity to attend the CARTA-

organised Conference on Public Health in University of Witwatersrand. Similarly, fellows of JAS 1 Cohort 2 appreciated the opportunity to visit an active research site on their four day field visit to Ifakara Health Institute Field station in Kilombero. Participants of JAS 1 for Cohort 2 also benefitted from more interactive approaches, with the inclusion of group work and games, as well as time allotted for self-directed learning. These new additions allowed for networking and more meaningful engagement both among students and between students and facilitators.

- The success and relevance of the CARTA training model has led to improvements in some postgraduate programmes and training approaches of partner institutions. For example, at Moi University components of the JAS series were incorporated into institutional training and academic courses, at both Masters and PhD levels. UNIMA incorporated elements of JAS sessions into their induction courses for new PhD, Masters in Public Health and Masters in Medicine students. UNIMA also requires PhD students to have a professional development plan and to undertake online courses in research and critical thinking skills. CARTA also reports increased use of advanced software packages as a result of exposure to them during JAS sessions. For example, as part of inter-JAS activities, a Cohort 2 fellow has organised clinics for the APHRC staff on the use of STATA for quantitative analysis.
- CARTA assembled a majority Africa-based facilitation team, due in large part to its success in strengthening participation from a range of partner institutions and strong links with external institutions. This ensured a focus on context-specific public health research themes and methodologies, and the development of regional faculty.

Key challenges

- Competing demands of members of the CARTA Secretariat affected programme administration. All members of the CARTA programme team, with the exception of the Programme Manager, Communications Officer and dedicated Administrative Assistant, maintain additional responsibilities at the APHRC.
- Limited staff numbers and difficulties attracting and retaining high calibre staff in a competitive employment market put the consistency and quality of programme delivery at risk. For example, the position of Programme Manager, vacated in April 2011, was not filled until February 2012.
- The challenge of accommodating fellows with diverse levels of skills and experience within the context of a single programme posed a challenge to CARTA. Fellows enter the programme at varying levels of skill and preparedness, but are all expected to meet programme milestones. CARTA attempted to address this issue through additional tuition where possible, the selection of appropriate supervisors and the fostering of intra-cohort communication, so that those in need of help could reach out.

Supervision and mentorship

CARTA's strategy is to both ensure appropriate supervisory support to students and to strengthen supervisor skills through training and peer to peer learning. Incoming fellows are assigned a primary

supervisor by their host university, usually based at the student’s home institution level in the supervisory pool and as such, additional supervisors can be assigned if the primary supervisor is relatively inexperienced or does not have the required level of subject expertise. Supervisors are also offered training during the relevant JAS when they are introduced to CARTA’s philosophy and expectations and are encouraged to learn from more established colleagues and those rated more highly by students. Northern partners are also expected to make potential supervisors available, with the intention that they be paired up with Africa-based co-supervisors. Table 4 shows the progress in supervision training in the first four years of the Initiative.

Table 4 – Key quantitative indicators related to supervision and mentorship

Indicators	Total to date
Number of PhD supervisors trained	62
Number of supervisor training workshops held	4

Initially supervisors were disengaged as 10 of the 25 cohort 1 fellows did not have a single supervisor attend JAS1 during year 2. Some progress was made in year 3 after CARTA made expectations clearer through a supervisor-supervisee contract, which increased attendance by supervisors at JAS. There has also been increased supervisor engagement in the online platforms. During year 4 alone, 21 supervisors were trained in Johannesburg (December 2012) and 25 supervisors received training in Dar es Salaam (March 2013). CARTA reported that with training, supervisors engaged more with the responsibilities outlined under the formal Supervisor-Supervisee contract, which had been signed by most fellows and supervisors. For example, for year 4 both Wits and UNIMA observed more timely feedback from supervisors on fellows’ manuscripts than in previous years, as well as a more systematic approach to documenting supervisory meetings at UNIMA. It was further reported that supervisor training was seen as a key element of institutional capacity building

Key enablers

- Good uptake of places on supervisor trainings yielded improvements in supervisor quality and consistency in the approach to supervision across partner universities. The perceived value of the supervisor trainings was also evidenced by the high uptake of places on refresher courses. While reports certainly indicate improved supervisor capacity, CARTA is endeavouring to more rigorously document training outcomes in order to report more tangible evidence on the improved capacity.
- The timing of supervisor trainings is yielding improved communication between students and supervisors: the synchronisation between refresher courses and JASs allows supervisors to attend fellow presentations and meet fellows in an environment relatively free of the professional demands found in home institutions. For example, during JAS 1 Cohort 3 fellows had the chance to present their research protocols to their supervisors and received

comments on improving them. During JAS 2 in Wits, supervisors and fellows also had time to meet and benefitted from interactions both inside and outside the classroom.

Key challenges

- CARTA's incentive mechanism for supervisors posed a potential obstacle to improving delivery on supervision roles and responsibilities. In the context of a regional culture where academics may be personally rewarded for their engagement with similar programmes, CARTA's policy of not providing systematic compensation to supervisors and rather covering basic expenses meant that challenges were faced in attracting and engaging supervisors. Attempts were made to incentivise supervisors with annual rewards for good performance (e.g. fellows graduating early or on time) and an emphasis on opportunities for supervisor personal development through exposure and networking opportunities at refresher courses.
- The lack of a formal mechanism and roles for North-South co-supervision may result in sub-optimal use of supervision resources across the consortium. By not formally structuring the use of Northern co-supervisors, CARTA risk undermining the objective of making the best use of faculty knowledge and abilities, and diffusing best practice in supervisory standards throughout the consortium. However, some attempts to formalise engagement from Northern supervisors have been observed. For instance, the appointment of a Northern Partners' Co-ordinator based at Warwick in December 2012 is likely to contribute to the development of more formal mechanisms for co-operation and supervisor allocation.
- Currently, supervisors are allocated on an institutional basis and CARTA relies on the judgement of partners with respect to the maximum number of students each faculty member can supervise. This may result in a potential over-allocation of students to a supervisor as the actual time commitment per student required from the supervisor is difficult to capture in institutional guidelines.

Research governance, management and administration capacity

CARTA is governed by the Board of Management (BoM) and managed on a day to day basis by the Secretariat based at APHRC, which liaises with the funders and the committees at each partner institution. A key part of CARTA's strategy in the area of research governance, management and administration capacity is its emphasis on developing and delivering specialised training programmes for junior faculty and university administrators. Topics covered during the annual workshops include institutional research strategy, research governance and proposal writing. The facilitation of network-building between administrators is a core focus of the workshops, and delegates are encouraged to find at least one way to put learning from the workshops into practice at their particular institution each year.

Table 4 – Key quantitative indicators related to research governance, management and administration

Indicators	Total to date
Number of faculty and staff trained in RGMA ³	Over180
Number of Faculty and Administrators workshops	3

CARTA’s activities in research governance, management and administration capacity appear to be broadly progressing according to plan. Partners appear to be engaging well with research governance, management and administration plans and training and also providing feedback for further improvements overall. Training for support staff has also been delivered, with participation from all African partner institutions. Problems in year 3 were experienced due to the temporary nature of research governance, management and administration posts coupled with relatively low salary scales which have increased the turnover rate of financial officers and delayed financial reporting. However, by year 4 the situation had improved and a total of 92 administrative and faculty staff participated in training workshops during that year.

Key enablers

- Training workshops increased interest in and awareness of the importance of research management and administration functions, enabling further capacity building. The strict place limitations enforced as well as CARTA’s promotion of these events via the website and newsletter increased the profile of the training among staff members and even the general public. The translation of workshop learnings to capacity building practice is evident, for example, at Moi University where an online evaluation is being piloted as a tool for students to report on the quality of teaching and research at their institution. SIDA has also contracted a specialist to provide training on Result-Based Management. This will strengthen CARTA’s monitoring and evaluation capacity in and provide an opportunity to write up M&E data and reflect on the future of the programme.
- Workshops enabled cooperation and collaboration among partner institutions by engendering proactive engagement with participants’ local CARTA communities and through the creation of function-specific administrator networks. For example, following the FAS Workshop 2012, the Consortium of CARTA Librarians (CCL) was established with the aim of compiling and digitising CARTA publications for access across partner universities. Members continuously exchange knowledge and expertise through a website platform and intend to inform CARTA capacity building activities with the results of an online survey developed to assess librarian skills and their digitisation projects. Other areas of focus include: training on mentor/mentee relationships, emerging technologies (e.g. web 2.0 tools) and

³ Including Junior Faculty(recent PhDs), Librarians/IT, Finance officer, Postgraduate training coordinators, Senior academics in administration (e.g. Deans of PPH department)

proactive librarianship, advocacy and marketing. The CCL is led by the librarian at the College of Medicine, University of Ibadan.

- Recognition of the need for the engagement of high-level university leadership, in addition to administrators and junior faculty, is crucial for institutional capacity building. With this in mind, CARTA has targeted high-level buy-in with initiatives such as the inaugural Vice Chancellors' Forum, held in November 2012 at Wits. The Forum discussed how the CARTA programme may contribute to institutional and regional objectives and facilitate increased administrative co-ordination among partners moving forward as well as networking among leaders.
- Improved staffing and recruitment across partner institutions and at the CARTA secretariat enhanced CARTA's administrative, collaborative, management and research capacity. During year four, a new CARTA focal person were hired at UDSM⁴ and in December 2012, a Northern Partners' Co-ordinator based at University of Warwick was recruited. Other key hires included a new programme officer based at the University of Ibadan as well as a new CARTA training coordinator.

Key challenges

- The relative infrequency of training workshops as well as the place limitations constrained the engagement of staff members at partner institutions and the effectiveness of capacity building efforts. While this challenge is tied to logistical challenges and resource constraints, CARTA have begun a process of digitising training materials to reach a larger number of members. CARTA acknowledges a trade-off between more frequent, site-specific training and maintaining current arrangements: the former may help to build institutional capacity, but the latter helps to disseminate best practice across the region and to build regional networks. The cost implications of more frequent trainings must also be taken into account.
- Institutional inertia and special interest groups are a challenge to attempts to change institutional policies. Attempts to move toward new administrative mechanisms, use of new technologies or teaching methods, or the introduction of new staff (e.g. joint appointments) were slow at some institutions and the diffusion of CARTA's philosophy into partner institutions has been varied. Thus, attempts at changing the system have to be on a phased basis, with engagement of existing staff assured at critical stages, if they are to be successful.

ICT & infrastructure

CARTA's approach to strengthening the physical and ICT environment centres on utilising the CARTA website productively, institution-led physical infrastructure investment and the provision of appropriate hardware, software and training to fellows. For CARTA, the website functions as a key platform for networking, dissemination and communication for members of the network and the wider public. As regards investment in physical infrastructure at the institution level, each individual partner is expected to take responsibility with CARTA providing only limited seed funding. The exception is the case of those

⁴ An assistant focal person was also appointed at the University of Nairobi

partners involved with JAS hosting, who receive additional funding to ensure that room space and ICT network capacity is satisfactory for the delivery of the 3-4 week residential seminars. In addition, as part of the CARTA programme each fellow receives a laptop set up with NVivo, Stata, EndNote and Microsoft Office software, and attends software training at the annual JAS.

CARTA partner institutions reported the positive contribution of CARTA funding to creating environments conducive to study and that, despite some procurement issues, computer facilities had generally improved. For example, NUR has opened a 'CARTA Lab', equipped with broadband, workspaces and video-conference facilities. In UNIMA, the Polytechnic and Kamuzu College of Nursing, have established PhD study rooms equipped with ICT facilities and the University of Dar es Salaam saw Wireless Local Area Network (WLAN) installed in February 2013.

Key enablers

- Where CARTA funding is provided, monitoring of progress demonstrated CARTA's commitment to infrastructure strengthening and kept partner institutions focused on building capacity in this area. Monitoring takes place via a reporting template and follow-up site visits by the CARTA M&E officer. These visits are strategic and are conducted during regular CARTA meetings at or near partner institutions. The M&E officer and his team visited NUR on February 19-21 2013, Moi University on June 29-31 2013 and the University of Nairobi on July 31-August 1 2013. Dar es Salaam, Ifakara and Wits had been visited previously.
- After a slow start due to internal commercial and management issues at Google, the CARTA website was revamped and serves as a fully operational interactive platform with up-to-date programme information. The website allows for forum discussions, completion of joint assignments and hosts specialised collaborative platforms such as that of the CCL. The JAS Portal is also seen as key to the delivery and dissemination of JAS content as well as its evaluation. CARTA staff underwent training on website management on 3-7 December 2012 in Nairobi facilitated by K&K, a Rwandan firm contracted by Google to provide ICT support to the programme.
- Uptake of online networking and information sharing has been good among fellows, supervisors and programme staff. Apart from the website, the consortium mailing list enables easy interaction within and between cohorts, supervisors and programme staff. In addition, off-platform networking is facilitating a different kind of networking among fellows. Building on relationships developed in the programme, fellows are seen migrating to external social media. Cohort 2 has its own Facebook page, used for informal networking and for eliciting collaborative solutions to academic exercises.
- CARTA training workshops have led to concrete improvements in ICT infrastructure and streamlined processes at partner institutions. For example, at Moi University training has contributed to a successful solution to data security issues and the establishment of an ICT help desk. Fellows from both Wits and APHRC who were trained in the use of specialist software during the JAS have reported passing on their knowledge via trainings for faculty staff at their home institutions.

Key challenges

- CARTA's policy of institution-led development of physical and ICT infrastructure may mean that disparities remain across partners in the levels of engagement with projects of this type. While this may be inevitable, larger institutions or those more successful in attracting external funding are often able to make more progress on this measure, which has implications for fellow advancement across the consortium.
- On-going national infrastructure challenges in the region continue to negatively impact use and development of ICT infrastructure, with several countries in the region facing on-going power interruptions as well as patchy and slow internet access. Of course, the state of national power grids and ICT networks as well as the degree of regional interconnection is a key determining factor in whether CARTA ICT investment will yield desired outcomes.

Linkage, learning and exchange

Networking, sharing experiences and adoption of good practice within consortium (between member organisations)

With a view to strengthening internal consortium network relationships, CARTA takes an inclusive, committee-based approach to consortium management, involving individuals from each partner institution in consortium governance. Fellow selection criteria are agreed and results reviewed at the Partners' Forum which, in addition to the Board of Management (BoM), also provides a setting for discussions of programme level successes and challenges. With a mix of virtual and face-to-face engagement, dispersed stakeholders create and sustain the relationships that keep CARTA moving forward.

Although there was a clear centre of gravity around the two lead institutions at the outset of the programme, efforts have been made to ensure broad engagement and active participation of all member organisations in the CARTA network. For instance, Moi University and Wits have worked together on improving data security and on managing responses to ICT queries. This resulted in the setting up of a common Help Desk at Moi. Moi and Nairobi have also signed collaborative agreement on registration, trainings and supervisory selection. However, engagement by partners appears to be primarily with the CARTA Secretariat rather than between partner institutions themselves. In this sense, challenges in the retention of Secretariat staff jeopardise communication and broader programme delivery.

Key enablers

- Improved communication among partners, consortium flexibility in respect of JAS hosting and good progress on existing programme objectives enabled greater trust among partners and greater engagement with the programme. In particular, open and transparent selection standards and transmission of best practices helped to improve performance of weaker institutions. Events such as the May 2013 five day workshop at the Nordic School of Public Health, organised by the University of Gothenburg, served to consolidate ideas about the programme and encourage further collaboration. Fifteen participants drawn from CARTA institutions participated in the workshop.

- Other areas of sharing best practices have been in recruitment of fellows, monitoring of fellows, and engagement of university leadership and the Partners Forum (PaF) platform, which has proven to be resourceful ground for different partners to learn from one another
- Monitoring site visits by the CARTA M&E officer with respect to ICT infrastructure progress were particularly useful for less established institutions as they focused on site specific issues and allowed for contact with the consortium beyond the virtual networks and major meetings.

Key challenges

- Partners maintain institutional administrative requirements with respect to registration criteria and tuition fee waivers which led to one cohort 1 fellow not continuing in the programme. This may adversely impact the take-up of fellowships as well as programme reputation. CARTA must strive to identify and standardise these 'red lines' so as to inform programme design and fellow selection.

Consortium networking and sharing experiences with other consortia under the African Institutions Initiative

Established channels of communication and information sharing between CARTA and other consortia created mutual advantage and consolidated networks. Linkages between CARTA and other consortia are enhanced by the regular dissemination of the *CARTANews* newsletter, mutual sharing of calls for papers, grants and job opportunities as well as collaboration at key events. Informal links with other consortia in the African Institutions Initiative were made in year one and since then CARTA has established a good relationship with THRiVE and IIDP, facilitating the initiative's goals of increasing regional networking. Cross-funding of fellows is laying groundwork for broader intra-AII interaction and stronger regional links as well as addressing overcoming per-fellow funding challenges. CARTA has explored cross-funding of cohort 2 fellows as a way to ensure adequate funding for fellows while providing opportunities to a broad number of applicants. In year three, one cohort 2 fellow was also a fellow at SACORE and in year four collaborated with SACIDS on JAS1 facilitation in November 2012.

Consortium networking and communicating with external stakeholders

When it comes to engaging with external stakeholders, CARTA's strategies focus on leveraging partners' existing relationships as well as building new links, encouraging fellows to develop high quality proposals for external funding and increasing visibility by disseminating information on its activities through various media. In addition, CARTA supports networking and meaningful engagement with wider academic communities by requiring fellows to share early findings via Inter-JAS seminars and to produce high quality publications based on CARTA-supported research.

Promoting the CARTA model through engagement with the wider international academic community and with donor organisations is of primary importance for CARTA. This is shown by the Funders' and Patrons' Advisory Group meetings and plans for continued engagement with existing and new partners and funders as well as for some initial engagement with policy bodies.

Table 5 – Key quantitative indicators related to networking and communication with external stakeholders

Indicators	Total to date
CARTA fellows whose abstracts were accepted and attended scientific conferences	11
Number of peer-reviewed publications	48
Amount of external funding leveraged ⁵	US\$11.1 million
Number of research grants awarded to CARTA fellows	7

Key enablers

- Leveraging existing relationships with external stakeholders has enabled CARTA to draw on external expertise, increasing the quality and context relevance of fellow training. Individual programme partners, particularly large and well-established ones like Wits and APHRC, maintained strong links with government ministries, research centres, professional bodies and other universities in their respective countries and areas of expertise. The partners are able to leverage these relationships and external facilitators were involved in JAS2 for cohort 1, the FAS workshops and JAS1 for cohort 2 stakeholders (Dr Samuel Were from the Kenya Ministry of Health; teams from the African Leadership University and the Kenyan AIDS Law Project).
- CARTA facilitation and encouragement of relevant, high quality research has enabled a number of fellows to successfully position themselves in the wider academic community and create strong links that strengthen the research capacity and reputation of CARTA. For example, during year four two fellows were contributing to large scale HIV-related research in Malawi, a NUR fellow participated in research with the Rwandan Ministry of Health, and another was involved in implementing a South African HIV surveillance programme assisted by the Health Protection Agency, UK. In addition, two CARTA fellows (one registered with Cohort 2, University of Nairobi and another from Cohort 1, the Obafemi Awolowo University) were invited to participate in Brown University’s Graduate Program in Development in the United States. The fellows planned to attend Brown in September-December, 2013 and January-May, 2014, respectively.
- CARTA have shown a good ability to attract a considerable amount of new funding to support research capacity building efforts during the Initiative: In the first four years of the Initiative, CARTA has secured approximately US\$11 million in new funding from the Ford Foundation the Swedish International Development Cooperation Agency (SIDA), Google.org, DelpHE British Council, the MacArthur Foundation and the Carnegie Corporation. This has been in part due to positive recommendations from current donors. In

⁵Year1: 3 grants of approx. US\$2 million, Year2: 2 grants of approx. US\$3.5 million, Year 3: 3 grants of approx. US\$5.5 million, Year 4: 1 grant of approx. US\$73,000

addition over 40% of CARTA fellows have received additional research grants from various donors and research funders.

- CARTA's website has been a key enabler in its dissemination strategy, providing news and events for fellows and staff. The website also hosts CARTA's biannual newsletter and the blogspot⁶. In addition, the 2013/14 call for applications was disseminated more widely than before, via the CARTA website, specific partner institution websites, poster campaigns at specific universities and academic and funding aggregation websites⁷.

Key challenges

- Success in leveraging funding from multiple sources comes at the cost of having to manage multiple expectations from funders. Administrative staff are still trying to optimise the balance between programme activities and funders' monitoring and administrative requirements. Given the small administrative team at CARTA, the competing time demands of staff who must also deal with the substantial reporting requirements associated with current funding relationships remains a challenge. While the consortium has managed these requirements well to date, in part due to dedicated staff time from APHRC, strategies to address this burden should be considered in the next phase of the Initiative. The Funders' and Patrons' Advisory Group, which CARTA uses to proactively discuss the issue of the multiplicity of funding and consultations is an example of the kinds of initiatives that may be useful.
- Brand building efforts may be impeded by the lack of consistent policies on how to attribute work to CARTA. The CARTA agreement calls for fellows to mention CARTA affiliation for any research funded by CARTA (including both publication and presentations made at international conferences), but not more broadly alongside their institutional affiliation for independent research or other academic activity.

Engagement with Evaluation and learning

Following the baseline workshop, clear lines of communication were established between CARTA and the E&L team. This has helped to facilitate the transfer of information and provide a locus within the consortium for programme management, co-ordination and E&L. CARTA and the E&L team have developed a shared understanding of CARTA's intervention logic and plans. It is apparent that CARTA had thought about their approach in a structured way and used a form of intervention logic in their thinking. The Director and programme manager have been helpful and informative in clarifying their approach and the E&L team have appreciated and incorporated new information into the evaluation approach. CARTA have provided broad and comprehensive evaluation evidence, though with a significant delay in some years. CARTA have developed a revised framework containing the evaluation indicators. This clearly sets out why the indicators are important, how they will be used by CARTA, who is responsible for collecting and collating them and the frequency of collection.

⁶ <http://cartafrica.blogspot.com/>

⁷ e.g. www.africadesk.ac.uk , scholarship-positions.com

Observations

Given the nature of progress during the first phase of the Initiative, the E&L team present a number of potential issues for the consideration of CARTA and a number of recommendations for evaluation and learning in the next phase of the Initiative:

Issues to be considered going forward

- **Strategies for securing further external funding** - CARTA has made tremendous progress in the first four years of the Initiative in respect to securing further external funding. Finding ways to attract resources as a network is of particular importance in considering how to sustain and grow CARTA beyond Wellcome Trust support for the next phase of the programme
- **Strategies for staff retention** - CARTA management needs to reflect on incentives for staff retention given the reported impact of staff turnover on achieving consortium objectives and sustainability of gains in capacity over the evaluation years. CARTA may also want to consider different approaches to ensure sustainability of research careers, reflecting in particular on the trade-offs between probabilities of academic job security and the pace of research progress, quality of outputs and likelihood of attracting independent grant funding.
- **Institutional buy-in from all partners** - During the next phase of the programme it will be essential for CARTA to try and institutionalise its products at all partner institutions. Although a lengthy process, the extent to which accreditation of the JAS courses by individual universities is taken up will be a key enabler of this in the next phase of the Initiative.
- **Areas for exchange with other All consortia** - CARTA should consider the ways in which further collaboration with other AII consortia may be beneficial in the next phase of the programme. Cross-consortia networking may provide the opportunity for consortia to share and potentially standardize mentoring agreements in effort to help standardise quality. Harnessing the potential of partner institutions that are involved in other consortia, such as Makerere University or the University of Malawi, may help to provide the forum for future exchanges.

Recommendations for E&L

- **Selection criteria for students** - Given the steady increase in demand for CARTA fellowships witnessed over the first four years, the selection criteria for awarding scholarships should be regularly reviewed in the next phase of the programme to ensure it remains relevant and effective given resource limitations.
- **Contributions of RGMA training programmes** - For capacity building, it is important to not only develop high quality courses, but to enable participants to use training to improve research management and governance. Evidence on the impacts of training courses for faculty and administrators on CARTA's institutional mechanisms should be considered.

- **Build in time for reflection and learning** - Throughout the first four years of the Initiative CARTA have demonstrated their ability to monitor and collect data on their activities. In the next phase of the programme it will be important for CARTA to consider how it uses that data and what high-level learnings or reflections can be applied to future activities.
- **Data aggregation** – There have been discrepancies in the data received suggesting a need to rethink the way this data is collected in future. In general there is also a need for less aggregation of data received. This is partly the result of the difficulties in gaining data from all consortium members, but it also partly due to the way in which the data is presented