Independent Review of CIRCLE

Final Report

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[1] Removed due to open access publication and data protection purposes.

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List of Acronyms and Abbreviations

3CGS	Centre for Climate Change and Gender Studies
AAS	African Academy of Sciences
AC	Association of Commonwealth Universities
ACCFP	African Climate Change Fellowship Programme
Basecamp	A web-based system for CVFs and Institutional Champions to share information and their experience with the project
CIRCLE	Climate Impacts Research Capacity and Leadership Enhancement
Concordat	Concordat to Support the Career Development of Researchers
CPD	Continuing Professional Development
CRAC	Careers Research and Advisory Service
CVF	CIRCLE Visiting Fellow
EORIC	Earth Observation Research and Innovation Centre
FAC	Future Agricultures Consortium
ISP	Institutional Strengthening Programme
KALRO	Kenya Agricultural and Livestock Research Organisation
LSTHM	London School of Hygiene and Tropical Medicine
NRI	Natural Resources Institute, University of Greenwich
PDP	Personal Development Plan
QSC	Quality Support Component
RDF	Researcher Development Framework
RUF	Research Uptake Fund
RUFORUM	The Regional Universities Forum for Capacity Building in Agriculture
SA	Specialist Adviser
SJR	SCImago Journal Rank
ToR	Terms of Reference
ToT	Training of Trainers
UCL	University College London
VFM	Value for Money

Executive Summary

The Climate Impacts Research Capacity and Leadership Enhancement programme (CIRCLE) provides one year fellowships – Circle Visiting Fellowships (CVFs) – to climate change researchers based in Africa in the early stages of their careers. The fellowships are held at host institutions[2] which provide professional and technical support to the CVFs. The CVFs undertake original research, which is published in peer-reviewed journals. The CVFs' home institutions benefit from the Institutional Strengthening Programme (ISP), which strengthens their research training programmes, mentoring and quality assurance systems.

This independent review assesses how effective CIRCLE has been, to the degree possible under the scope of this assignment and given that the programme is still being implemented. The review outlines options for future support, and focuses on the two core components: the fellowship programme and the ISP.

Fellowships

The fellowship component is working well. It is likely that the programme will achieve its targets for publications and conference attendance, and its intended outcome.[3] By the end of the programme in 2019, 99 people, more than half of whom are women, will have completed the fellowship programme.

The CVFs have so far published 33 articles, based on their CIRCLE research, in peer-reviewed journals. Two thirds have been published in widely recognised journals, and nearly half in journals that are of high quality and likely to be widely read and referenced (see Table 2, page 15). A further 87 articles are under review or awaiting publication, and we expect this number to increase. There is also evidence that CVFs produce a greater quantity of higher quality research than their colleagues who are not CVFs. However, a range of external factors would need to be considered before this impact could be attributed fully to the project.

The programme also provides CVFs with a framework to manage and develop their careers – The Researcher Development Framework (RDF). The RDF is a competence framework developed for researchers in the UK, which CIRCLE has applied to African researchers. CVFs found the RDF useful during their fellowship, and some of the CVFs continued, although less frequently, to use the framework once their fellowship ended. Most fellows reported that the competences related to networking, engaging and influencing were the most useful.

Institutional Strengthening Programme

The ISP uses an approach that was developed for research institutions in the UK. Institutional champions, a gap analysis and the development of an Action Plan are

[2] Host institutions are research institutions with research commissioning systems that offer learning opportunities to scientists from other institutions

[3] The outcome relating to the fellowship scheme is: "high quality researchers in African Research Institutions accessing research funding opportunities and generating internationally recognised knowledge and evidence to respond to Climate Change Impacts in Africa." The indicator is: "Number of researchers connected with the programme contributing to Africa sub-regional and global knowledge through invitations to speak or make poster/oral presentations at climate related conferences and events" with annual targets of 3 (2016), 30 (2017) and 50 (2018).

used to strengthen the management of early career researchers in their home institutions. The success of the ISP depends on the capacity of the home institution to dedicate staff time and money to preparing and implementing the plans. There is some evidence that a lack of funding and constraints on the time of senior staff, whose involvement in the process is essential, can hamper project progress. It is therefore not possible at this stage of the programme to identify or validate the sustainable impact of the ISP on the performance of home institutions.

Value for money

The original value for money proposition for the programme focused on the economical procurement of inputs and the selection of project partners. This has been achieved. CVF costs are 60% of the equivalent costs for a fellowship held in a developed country. Other economic savings have also been achieved during implementation.

There is some evidence that the programme is efficient. CVFs appear to have a better publication record than people who are not part of the programme.[4] CIRCLE is also likely to become more efficient at publishing research and has a comparable record to a similar project, the African Climate Change Fellowship Programme (ACCFP).[5]

There is insufficient data at present to assess whether the programme has been cost effective in terms of the impact on the research capacity of home institutions.

Lessons and recommendations

The principal lessons and recommendations are:

1. Indicators and targets for the improved performance of the individual Home Institutions (HI) should have been developed by each HI during the development of their Action Plan. Each HI could then have reported on their progress against these. In their absence, assessment of progress with the ISP has relied on anecdotal reporting of activities and events surrounding the preparation of the ISP. In the final year of the project, HI should develop a monitoring framework for their Action Plan that includes indicators of research capacity and then report progress against it. The HI did prepare gap analyses and Action Plans to meet their institutional development needs. These will be revisited at the end of the programme and will provide some measure of the success of this component. However, a more structured approach to setting targets for this component at the level of each institution would enable a more complete assessment of progress to be made. Consideration should be given to having a more comprehensive monitoring plan for the ISP component, with targets and actions for this component
2. Greater attention needs to be given to the institutional capacity of H I and whether they have the resources needed (staff and budget) for their contribution to the ISP. Action Plans should include the resources of the HI that will be needed to implement the Action Plan and the likelihood of these being available. Additional support to help HI implement their Action Plans is planned

[4] CIRCLE 2016: *Comparison of CVFs to counterfactual and applicants*. CIRCLE Project Report.

[5] Ng'ang'a, W. & Wausi, A. 2015: Evaluation Report of the "Africa Climate Change Fellowship Program" Project Phase II, March 2015. See page 35. Report available at: http://bit.ly/ACCFP_Evaluation

for the final year. This implementation fund to support the implementation of the ISP Action Plans should be reviewed in the final year.

3. Participation by administrative as well as faculty academic staff of HI in the ISP component contributes to more rapid progress with ISP Action Plans. The project should take steps to include administrative staff as well as academic staff in the ISP component.

4. The ISP component should review whether more general training in the use of competence-based performance management tools is needed to support the implementation of the RDF in the HI.

5. Although the original business case and Theory of Change (ToC) did not include a complete risk assessment, the inception phase identified some risks that were addressed in the implementation phase. The programme developed a risk management framework that was monitored during annual reviews, although this was not explicitly linked to the ToC. A future programme should include a more comprehensive risk framework that should be monitored consistently throughout the project.

6. CVFs appear to be producing a higher quality and quantity of research than their colleagues who are not CVFs. The project's approach to assessing the quality of research is based on where it is published. A similar approach should be used in future projects, with targets for publication in the higher quality and more influential journals.

7. A more structured approach should be taken to assessing the effectiveness of the Research Uptake Fund (RUF). This would involve applications to the RUF outlining both the outcomes to be achieved and proposals on how the outcomes would be assessed.

8. The programme performed well in recruiting women CVFs, and its performance improved over the life of the project. More consideration should be given early on to identifying the obstacles to recruiting women, and developing measures to overcome them.

9. Some of the CVFs haves been successful in securing funding for further climate research. However, some of the CVFs have also asked for more help in identifying and securing research funds. Providing training in how to prepare research proposals worked well. Further support of this sort should be considered to help CVFs gain access to research funds after their fellowship is completed.

10. To increase the influence that CVFs have on African policy making in climate change, more support could be provided to outreach and communication.

11. Any future project should have a more comprehensive ToC, including assumptions and risks.

Options for the future

CIRCLE is performing effectively. Targets for the fellowship programme are being met, and there is evidence that the research produced is of good quality. There is less evidence so far that the ISP component is having an impact, partly because this component takes longer to produce results. In addition, progress depends on there being sufficient capacity in the HI to support and implement the Action Plans developed. Some institutions have asked for additional support to help implement

Action Plans; suggesting there is need to support. This could be considered as part of a future project.

There is a case for continuing to provide support to improve the quality and impact of climate research in Africa. This is based largely on the successful performance of the fellowship component. The ISP component has yet to demonstrate that it produces sustainable change in performance of the Home Institutions. It may require more time, with a greater focus on the support component to demonstrate measurable change and to support sustainable change in the performance of those institutions over the long term.

The options for future support include: i) Extending the programme to provide another cycle of research fellowships for the existing institutions and providing further focused support for institutional strengthening; ii) Extending the programme to support the ISP component only iii) Expanding to cover new institutions; iv) Expanding the range of support to include follow-up support for the CVFs and institutions by providing funding for collaborative climate research and support for the implementation of the Action Plans for improving the management of research institutions.

Summary

Background and approach

CIRCLE provides fellowships to early career African scientists to undertake structured research skills development through a supervised placement in African host research institutions. The participating African research institutions also benefit from the programme through the strengthening of their research training programmes, mentoring, quality assurance systems and networking potential.

This review is structured around the two principal programme components: the fellowship scheme and the ISP. A section on Value for Money (VFM) assesses the extent to which the programme has met the original expectations on economy, efficiency, effectiveness and equity.

As this review was conducted while the programme was still being implemented, the findings on the impact of the programme are provisional. At the time of the review the 3rd cohort of CVFs were beginning their Fellowships and the 2nd Cohort were just finishing their Fellowships. Publication lead times, particularly for the prestigious peer-reviewed journals are often up to a year. As a result, most of the published research is by the 1st Cohort of CVFs. Therefore, the assessment of the CVF component is based largely on the evidence provided by the publication record and experience of the 1st Cohort. The institutional strengthening component is expected to take longer to produce evidence of impact. It is therefore too early to draw firm conclusions about the impact of CIRCLE on the home institutions.

Fellowship component

The fellowship component has been successful in terms of outputs. By the end of the programme, 99 fellows will have completed their fellowships, half of whom are women. Cohorts 1 and 2 have between them published 33 articles on their research, two thirds (2/3) of which are in journals that have a SCIMago Journal Rank (SJR), and nearly half of which are in journals that are of high quality and widely cited and read. A further 109 articles based on CIRCLE research have been submitted for publication.

CVFs are producing a higher quantity of and better quality research than non-CVFs. Most of the research by the CVFs has been published in reputable journals. Beyond publication, dissemination is also taking place, both locally and internationally via conferences and symposia. 60 CVFs from Cohorts 1 and 2 have attended 208 conferences at which their research has been presented. This gives some confidence that the research that CVFs are producing has the *potential* to have an impact on climate policy and programming, although it is too early to measure the impact that CIRCLE-funded research is having on climate policy and programme design.

Institutional Strengthening Programme (ISP)

The ISP component demonstrates good progress in terms of activity and outputs. However, it is too early to arrive at a definitive judgment about the impact on the performance of the HI. Champions have attended workshops and gap analysis and Action Plans to strengthen the management of the researchers early in their careers have been prepared. There is also evidence of HI adopting new procedures for the management of research staff (see Annex 3, page 65). Although, in the absence of indicators and targets for the improved performance of each Home Institution, it is not possible to quantify the impact and whether they achieved what they set out to achieve

in terms of improved institutional performance. The gap analysis and the production of Action Plans to address these gaps does set the stage for institutional strengthening, and in themselves are an indicator of the early stages of institutional strengthening.

However, the lack of funding in Home Institutions for the implementation of Action Plans and constraints on the time of senior staff who are responsible for driving implementation of the ISP are leading to delays in the plans being implemented. So far, it has not been possible to detect any impact on the performance of the Home Institutions. An implementation fund has been established to support the implementation of the Action Plans. The progress and the impact of this should be monitored in the coming year alongside a review of the approach and the use of the fund. A possible option for the future would be to extend some elements of the ISP component to help the Home Institutions establish a more structured approach to assessing their progress with Action Plans put in place.

The speed with which Home Institutions have made progress with the ISP component has varied. A key factor in the rate of progress has been the sustained engagement of senior champions in the Home Institution and the involvement of central institutional administrative leaders and budget controllers. Where this has happened, progress has been faster. If the ISP Champion is recruited from within a single faculty, it has proven harder to secure institution-wide support for the ISP component.

Some institutions have created teams involving staff from across the institutions (finance, human resources, teaching departments). Others have taken a narrower approach involving only the department or faculty directly involved in the project. Others have taken steps to establish climate change institutes or centres. In the future, the project should consider ways to involve more administrative staff in the project to identify and mobilise the resources needed for the Action Plans to be implemented effectively.

Overall, the level of ISP activity in the home institutions demonstrates a reasonable response to the ISP component. Often it seems to be the case that changes not requiring additional resources are easily implemented. For example, establishing a mentoring scheme can be done largely with existing resources. Similarly, policies on gender equality and promotion can be changed relatively cheaply. However, any change that entails additional training or consultancy support, or requires a significant input of senior staff time are proving harder to implement. Some of the ISP Champions have identified activities that would benefit early career researchers across the institution, but could not be provided because of the costs. For example, providing training in proposal writing and research management, which the CVFs valued highly, cannot easily be provided without additional resources, which Home Institutions rarely have.

CVFs have found the Researcher Development Framework (RDF) useful as a career management tool and have made good use of it during their fellowship. Some CVFs have continued to use it consistently as a tool when their fellowship has come to an end. There are limited examples of CVFs who return to their Home Institution and supervise post-graduate students using the RDF as part of their toolkit for supervision.

Gender Equality

CIRCLE has achieved its target of 50% of CVFs being awarded to women. It has performed significantly better than similar programmes in this respect. Critical to

achieving this target has been the requirement that HI must nominate at least one woman. The eligibility criteria were also adjusted to take into account leave women may have taken in order to have children, alongside providing training to female applicants in order to help them prepare their research proposals.

The Theory of Change

Risks and assumptions were not developed in the original Theory of Change (ToC). However, the programme reported on implementation risks in the annual reports, and the action(s) taken to mitigate them. These included currency risks, the risk of CVFs dropping out and staffing changes within the programme implementation team.

Key risks and assumptions not considered in the original theory of change included: i) the obstacles to recruiting female CVFs; ii) whether there are enough potential Home Institutions with sufficient capacity to be considered candidates for the institutional strengthening component; iii) the availability of funding for climate research once CVFs had completed their fellowship, and their ability to access it; iv) the timeframe for the publication of research findings being sufficiently short enough to enable results to be seen during the programme and within a short period of its completion.

Although not considered in the ToC, the project did consider and develop appropriate responses to these risks during implementation. Measures to increase the recruitment of women CVFs were successful. The screening process for the selection of home institutions was designed to exclude those with inadequate capacity to undertake the ISP and more recently an implementation fund for the ISP has been established (although it has yet to report on progress). CVFs have proved relatively successful in securing funding for further research. CVFs from Cohort 1 and 2 have between them secured £1.0m in research funding since returning to their Home Institutions.

In a future project a risk and assumption framework based on the Theory of Change should be drawn up at the outset and monitored consistently throughout the project alongside the project risk framework that has been developed and reported on by ACU.

Experience to date is that it can take up to a year (sometimes longer following a fellowship) for research to be published in a reputable journal. Furthermore, rapid publication is no guarantee of quality. The original logical framework did not include a quality threshold for publication apart from the requirement that the publication be peer-reviewed. A more stretching target would have been for all publications to be in journals that have a SCIMago Journal Rank (SJR).

A revised theory of change, which should be developed in the event of a successor programme should include:

- More consideration of the obstacles to women applying successfully for CVFs
- Greater attention given to the institutional capacity of home institutions and whether they can mobilise the resources needed (staff and budget) for their contribution to the institutional strengthening programme
- Attention to the need for CVFs to continue gaining access to research funds after their fellowship

- Increasing the support for outreach and communication to ensure that African climate research can influence African policy making on climate change

Beyond the lack of analysis in the Theory of Change, the lack of a baseline, and indicators and targets for the institutional strengthening component has made it difficult to assess the contribution the project has made to improving the performance of Home Institutions. In the future, the development of Action Plans by the Home Institutions should include the setting of indicators, targets and milestones for improved institutional performance and the regular reporting on these indicators and targets annually. Although the implementation of an agreed action is a good sign of a commitment to institutional strengthening, a more complete picture of progress against the Action Plan would enable a more effective assessment of progress and impact on institutional performance. .

Value for money

The project has met the two original VFM propositions for economy. Management costs have been kept below the expected level, and overall management costs were 5% in 2015-16 and 5% in 2016-17. Management costs were kept down by economising on travel for ACU staff and efficiency savings through the scheduling of steering committee meetings.

The project has also been efficient given both the publications record, and that CVFs appear to be more efficient at producing good quality publications than non CVF peers. Although the African Climate Change Fellowship Programme (ACCFP) which takes similar approach to CIRCLE has a better publication record based on volume of publications, this is partly because many more CIRCLE publications have been submitted than have yet to be published. Based on a quick review of other similar programmes CIRCLE appears to be the only project that assesses the quality of publications. It is not therefore possible to compare the quality of publications with similar projects.

The outcome of the project is “high quality researchers in African Research Institutions accessing research funding opportunities and generating internationally recognised knowledge and evidence to respond to climate change impacts in Africa.”

The first indicator for the projects outcome is *‘number of researchers connected with the programme contributing to Africa sub-regional and global knowledge through invitations to speak or make poster/oral presentations at climate related conferences and events’*. The milestones and targets for 2017 and 2018 respectively were for 30 and 50 researchers to speak at conferences – 50% of the CVFs. The project has detailed data on conference attendance, training and publications. The end of project target for attendance and presentation of research findings has already been met and is likely to be significantly exceeded by the end of the project.

The second indicator for the outcome is an ‘*evidence paper assessing the impact of the CIRCLE programme on research capacity at the home institutions within climate impact research’*. It is too early to assess the impact of the project on the research capacity of Home Institutions. Without a baseline assessment of research capacity before the project or an agreed set of indicators of research capacity in each Home Institution it will not be possible to arrive at a definitive conclusion of the impact of the project on research capacity. However, there are some indications that capacity is being developed, and some of this can be attributed to the project. 28 institutions have

completed their Action Plans – all but one of the institutions taking part in the ISP. There is also evidence of the Action Plans being implemented, which suggests that research capacity is being improved. Had there been more consistent setting of targets for the implementation of the Action Plans, it would have been easier to draw conclusions about their impact on institutional capacity and, ultimately, performance.

For future projects, to assess the impact of the project on the capacity of the Home Institutions to do research, each institution should establish a baseline with indicators, targets and milestones for improved institutional performance. These would be set out in the Action Plan developed under the ISP component and then be monitored and reported on during implementation.

Overall, there is some evidence that capacity is being developed, and that the capacity is being used to improve the management and delivery of climate research. It is not possible to attribute all the improved performance to CIRCLE, nor is it possible to assess by how much research capacity has been enhanced because of the project. However, it is a reasonable conclusion that some of the improvements in the management and application of climate research are a result of the project activities.

Options for the future

The CIRCLE model of supporting early career fellowships and their Home Institutions has proved largely successful. It compares favourably with similar projects such as the ACCFP, and has out-performed ACCFP on the gender balance of fellowships. Targets for CVF publications and conference attendance have been met, and it is likely that the project will achieve all its targets and intended outcome.

Progress with the ISP has been more mixed. Maintaining momentum with the ISP depends on senior staff continuing to engage at the Home Institution. Where this has been the case, good progress has been made. If a successor project is to be commissioned, more attention needs to be focused on how to support the Home Institutions, especially where getting senior staff consistently engaged has proved challenging. There should be attention placed on how to incentivise these senior staff members to become more involved in the project. Some additional resources for the implementation of Action Plans should be considered, alongside a requirement for Action Plans to include a budget that sets out what additional resources are needed to implement the Action Plan. Alongside this, to be eligible for support, the HI Action Plan would need to have indicators and targets for their implementation. This should then be monitored and provide evidence that the gap analysis and Action Plans were being utilised suitably and translated into greater institutional capacity and performance**.**

Based on these conclusions, there is a case for continuing to provide support to improve the quality and impact of climate research in Africa. Options for the future include: i) Extend the project to provide another cycle of research fellowships for the existing institutions and continuing to provide advice on institutional strengthening; ii) Expand the project to cover new institutions; iii) Expand the range of support to include follow-up support for the CVFs and institutions (this could be done by providing funding for collaborative climate research) and include support for the implementation of the Action Plans developed by higher institutions.

Introduction

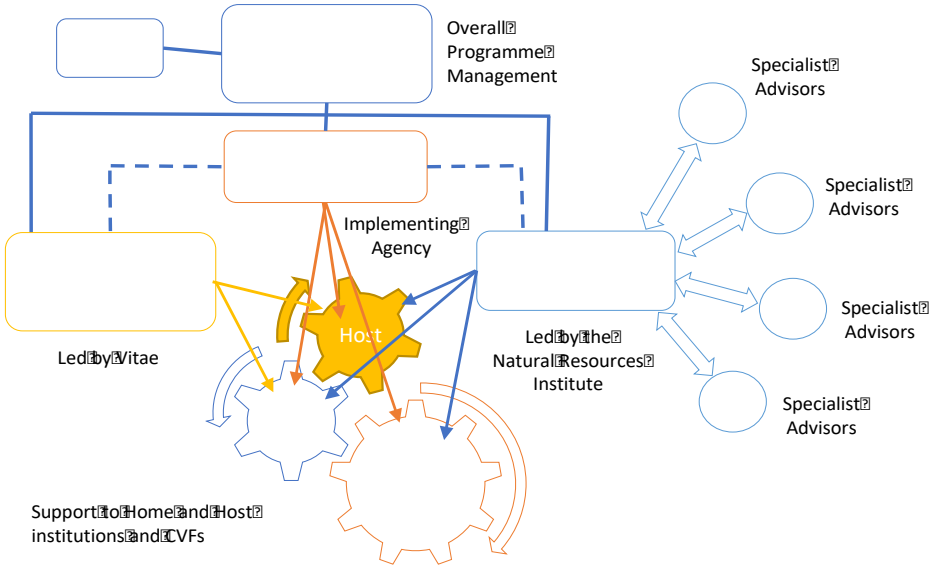
Background

1. The UK approved £4.97 million over 5 years (2013 to 2018) on the Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE) project, which has the objective of improving the capacity of African researchers and research institutions in undertaking research on the impact of climate change in Africa. The strengthening of high quality research skills would enable African institutions and researchers to help develop local solutions to the impacts of climate change at a local and national level.

2. After a six-month inception phase (with a budget of £200,000) an independent team reviewed the project and advised that the project should continue although it should consider a number of changes for improving project delivery and effectiveness. In April 2014, the Deputy Chief Scientific Adviser gave approval for the go ahead for the full implementation of CIRCLE. The main project started in June 2014.

3. The project provides fellowships to early career African scientists to undertake structured research skills development through supervised placement in African host research institutions. Host institutions are research institutions with research commissioning systems that offer learning opportunities to scientists from other institutions. Home institutions are those research institutions from whom the fellows are drawn. The fellowship project develops research skills in African scientists through experiential learning whereby the fellows conduct primary and secondary research and publish in peer reviewed journals under the guidance and mentorship of senior researchers and journal editors. The participating African research institutions also use the project to strengthen their research training projects, mentoring and quality assurance systems and networking potential.

Figure 1: CIRCLE Management structure



Review methodology

Approach to the review and presentation of findings

4. The Terms of Reference for the review required an assessment of DFID's design and planning of the project and the inception phase. Beyond the design and planning phase, the review was expected to include an assessment of the two core project components of the visiting fellowship project (CVFs) and the ISP. Beyond the core areas, the review was expected to assess the performance of the implementing partners, the impact on networking and collaborative relationships, and to compare CIRCLE with other similar capacity building projects.

5. The review is therefore structured and presented around the two principal project components. Attention is also paid to the administration and management of the project by the implementing partners. A section on Value for Money (VFM) assesses the extent to which the project has met the original expectations on economy, efficiency, effectiveness and equity.

Methodology

6. The review team carried out a review of relevant documents, which included quarterly and annual reports, annual reviews and the logframe as well as conducting over 20 in-depth interviews with project managers and implementation partners, cohorts 1 and 2 CVFs and ISP champions. The interviews gathered in-depth information on the involvement of the stakeholders in CIRCLE project, their experiences of the project, their understanding of the theory of change, and their opinion on how best the project can achieve its outcomes. Many of the interviews were conducted through telephone/skype to reach respondents spread across Africa (see Table 12). The review team also attended a workshop for cohorts 2 (end of fellowship) and 3 (inception) in Nairobi during which the team were exposed to the project implementation, experiences of cohort 2, and aspirations of cohort 3.

7. The findings from the relevant documents and in-depth interviews have been triangulated to provide a comprehensive picture of the state of CIRCLE project. Emerging opportunities to improve and strengthen individuals and institutional capacity to undertake climate change research have also been identified.

Limitations

8. As this review took place while the project was still being implemented, findings on the project's impact should be considered as provisional, and limited. The review however, does identify and provide information on key issues and makes suggestions on how to assess impact at the end of the project.

9. At the time of the review (January-April 2017) the 2nd Cohort were just finishing their fellowships. The 3rd and last cohort of CVFs were beginning their fellowships. Publication lead times, particularly for the prestigious peer-reviewed journals are often up to a year. As a result, most of the research that has been published so far is by the 1st Cohort of CVFs, so the assessment of the CVF component is based principally on the evidence provided by the 1st Cohort of CVFs.

10. The ISP is expected to take longer to produce evidence of impact. A CVF might be expected to successfully complete a fellowship and produce publications within 2 years, but it takes longer for the impact to be seen in the form of institutional change, as it is an intrinsically more complex process with more risks and assumptions underpinning it. It is therefore too early to draw firm conclusions about the impact of CIRCLE on the home institutions.

11. To assess the impact of the project on the capacity of the Home Institutions to do research each institution would need to establish a baseline with indicators, targets and milestones for improved institutional performance. These would be set out in the Action Plan developed under the ISP component and then be monitored and reported on during implementation. In the final year of the project the Home Institutions should be asked to prepare a monitoring framework for their ISP Action Plans and then report against it. This could then form the basis for an assessment of the impact of the project on their capacity to manage climate research.

12. The review team was only able to visit a few institutions in person and relied on interviews with CVFs and CIRCLE ISP champions to understand the experience of CVFs and what had been achieved by the institutional strengthening component. The project implementers have carried out regular online surveys soliciting feedback from CVFs and institutional champions on their activity and progress with the institutional development component. This feedback is incorporated into quarterly, annual and subject specific reports. We have therefore used the raw feedback and the data from the quarterly and annual reports into this review.

Project Components

Fellowship component

13. The project had a total of 34 cohort 1 fellows; 29 cohort 2 fellows; and 35 cohort 3 fellows. A total of 63 fellows completed the project in 2016 and a total of 35 joined the project in January 2017.

Table 1: Distribution of CVFs by country[6]

Country	Cohort 1	Cohort 2	Cohort 3	Total	%
Nigeria	12	13	15	40	41%
Ghana	5	6	5	16	16%
Ethiopia	5	4	5	14	14%
Tanzania	3	2	4	9	9%
Kenya	4		2	6	6%
South Africa	2	2		4	4%
Zimbabwe	1	1	2	4	4%
Uganda	1	1	1	3	3%
Sudan	1		1	2	2%
Total	**34**	**29**	**35**	**98**	

[6] Home and host institutions are listed in Annex 11

Length of the fellowships

14. The fellowship scheme targeted post-masters and post-doctoral fellows. For most of the fellows, the one-year duration of the fellowship was appropriate. The focus on post-masters and post-doctoral fellows who had a staff post at the home institution ensures that there is a strong link between the fellowship component and the ISP. Fellowships that would have taken CVFs away from their home institution for longer would have risked reducing the momentum of the ISP. In fact, there was good participation by the CVFs in their home institutions' ISP, with some CVFs becoming institutional champions following their fellowship.

15. Most CVFs felt that the length of the fellowship was appropriate. A few thought the option of extending their fellowship would have been helpful. Some had experienced delays in organising visas, establishing themselves in the host institution and dealing with delays in the disbursement of funds. This reduced the available time for research. Others experienced culture/language barriers during the fieldwork, while others needed additional training with scientific writing. A small number of interviewees felt that access to supervisors was not as easy as they had hoped. Also, some CVFs were expected to continue with teaching duties, particularly those who were based in their home countries. This led to concerns on the part of those CVFs as to whether they would complete the fellowship in time and at the same time be able to publish their work.

Quality of research

16. The Natural Resources Institute (NRI) led the quality support component (QSC) of the project. NRI identified and contracted Specialist Advisers (SAs) to work alongside CVFs. Also included in the QSC were the supervisors and mentors in the Home and Host Institutions who contributed to and strengthened the production of quality work by the fellows. This was done through guidance and peer-reviews provided during the research.

17. Feedback from CVFs on the support they received from the QSC was positive. Specialist Advisers to Cohort 1 fulfilled their duties on the whole well. The ratings of the specialist advisers given by the CVFs of Cohort 1 were as follows:[7]

Rating	Number
Excellent	13
Good	15
Acceptable	3
Bad	1
Very bad	2

18. At least 12 Fellows from Cohort 1 co-authored papers with their Specialist Advisers. Feedback to the QSC Leader at the final workshop for Cohort 1 was positive.

[7] The "bad" rating involved a disagreement between Fellow and the Specialist Adviser over the appropriateness of a gender approach to studying women entrepreneurs. Of the "very bad" cases one institution did not charge for the service, while the other related to a disagreement over academic citation procedure. See CIRCLE Annual Report 2015-16, page 20.

Several CVFs said that their SAs had been exceptionally supportive and some SAs are continuing to advise CVFs on publications and career options after the end of the fellowships.

19. For Cohort 2 the ratings were as follows:[8]

Rating	Number
Excellent	15
Good	9
Acceptable	3
Bad	2
Very bad	0

20. Feedback to the QSC Leader at the final workshop for Cohort 2 was generally good, and several Fellows mentioned that their SAs had been exceptionally supportive.

21. About half of the CVFs produced joint publications as the lead author with their supervisors as co-authors. Some of the home institutions rated shared authorship lower than sole authorship when assessing applications for promotion. As much of climate change research is multi-disciplinary in nature, there is a case for examining whether the incentives in some Home Institutions to produce single author research papers tend to discourage interdisciplinary and collaborative climate research.

22. The quality of CVF research is assessed by the number of publications and works being published in peer-reviewed and high impact journals. The target for publications has been met.[9] Annex 1 lists the 33 publications by cohort 1 and cohort 2 CVFs that were in peer-reviewed journals. 21 of the publications (64%) were published in journals that have a SCImago Journal Rank (SJR).[10] Table 2 summarises the rankings of the 33 articles so far published by CIRCLE CVFs by SJR quartile.

[8] No explanation is available for the "bad" rating of cohort 2. See CIRCLE Annual Report 2016-17, page 17.

[9] The indicator for output 3 is: "number of fellows contributing to research papers that have been submitted for publication in peer-review journals, published books or are cited in policy documents" and the target for 2017 is 43. 33 have been published out of 120 that have been submitted.

[10] SCImago Journal Rank (SJR indicator) is a measure of scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from. It expresses the average number of weighted citations received in the selected year by the documents published in the selected journal in the three previous years, i.e. weighted citations received in year X to documents published in the journal in years X-1, X-2 and X-3.

Table 2: Rankings of articles published by CVFs

SJR Rank	Number	%
Q1	7	21%
Q2	8	24%
Q3	5	15%
Q4	1	3%
Published in unranked journals	12	36%
Total	**33**	
Q1 and Q2	15	45%
Q3 and Q4	6	18%
All Q Ranks	21	64%

23. 45% of publications are in Journals in the top two quartiles of the ranking (Q1 and Q2), which indicates that they are of high quality and widely read.

24. 18% are in journals in Q3 and Q4. This indicates journals that merit a ranking, but are possibly new journals. Indeed, it possible that the journals have not been in print or online long enough to score in a higher quartile or are of niche interest and therefore do not attract widespread citation.

25. 36% of publications are in journals that do not feature on the SJR Index. These are either in journals that are new and have not been captured by the SJR index or are in in-house or other magazines which are not recognised by academic publishers. Despite this, they are important avenues for disseminating climate research findings and influencing policy (e.g. the FAO publication *Nature and Faune*).

26. Of the 12 articles published in journals that do not feature on the SJR list, 3 of the articles were published in the *African Journal of Sustainable Development*, 2 were published in *Agriculture and Food Security*. Both are regarded as reputable by the QSC leader although they are new journals and are in the process of establishing enough of a citation record to achieve a SCIMago ranking. Three were published in journals that featured in Beall's list, which is a list of journals that are thought to have poor peer reviewing and editorial control.[11] Publication in a Beall's list journal does not necessarily mean than an article is of poor quality. However, publication in a more reputable journal does provide a guarantee of quality that publication in a journal on Beall's list does not provide.

27. The data for published articles does not include articles submitted for publication, but not yet published. Table 3 sets out the submission and publication record of CVFs from cohorts 1 and 2.[12]

[11] In academic publishing, predatory open access publishing is an exploitative open-access publishing business model that involves charging publication fees to authors without providing the editorial and publishing services associated with legitimate journals (open access or not). "Beall's List", was regularly updated until January 2017. It set out criteria for categorizing predatory publications and listed publishers and independent journals that meet those criteria. Newer scholars from developing countries are considered to be especially at risk of becoming the victim of these practices.

[12] Where two CFVs jointly author a publication, it is counted as one publication.

Table 3: Publications of Cohorts 1 & 2 (as of April 2017)

	Cohort 1		Cohort 2	
	Submitted	**Published**	**Submitted**	**Published**
Peer reviewed publications	98	29	22	4
Conference proceedings or presentations		9		35
Book chapters		4		0
Policy documents		2		0
Blog posts		3		0

28. The range of climate journals is expanding, and there are more now that are willing to publish cross-cutting and interdisciplinary research. The NRI team leading the quality support component has been identifying reputable journals in which multi-disciplinary and cross-cutting research can be published (e.g. Journal of Environmental Change, Climate and Development, Climate Policy). In the final year of the project they will recommend those CVFs doing multidisciplinary research to try to get published in these journals first.

29. The publication record of the CVFs, particularly of cohort 1, demonstrates an acceptable level of quality, using the SCIMago rank as an indicator of quality. The publication records of cohorts 2 and 3 should improve on this. The objective should be for all research to be published in journals that have an SJR rank and for no research to be published in journals that feature on Beall's list. Some allowance could be made for journals that are from reputable publishers that have yet to be recognised by the SCIMago rankings.

Research uptake and research impact

30. The Research Uptake Fund (RUF) was established in 2016 to facilitate the use of CIRCLE research by policy makers, practitioners/users and other stakeholders. It was created by the project, with the approval of DFID, to strengthen the links between research, policy-making and practice. It was also designed to support engagement with stakeholders throughout the research cycle and ensure that the research is responding to well-defined research questions and developmental needs.

31. A total of 35 applications were received from cohort 1 and 2, out of which 19 grants were awarded; 10 awards were made to cohort 1 fellows and 9 to cohort 2 fellows. A total of 9 were for large grants ($2,000 – $5,000) and 10 were for small grants (up to $2,000).

32. The activity supported by the RUF was mostly used for workshops at which research findings were presented and discussed, and for training people (including farmers or local community groups) to use the findings from the CVFs research. From the reports of the workshops available, it is not possible to reach a firm conclusion of the effectiveness or impact of the activity. Much of it comprises lists of attendees, photographs of posters and speakers and the subjects discussed. However, some of the events identified follow-on work that could lead to the expansion of the impact of the research. For example, a workshop on *Women, Entrepreneurship Development*

and Climate Change led to the communities taking part in a project that would identify and promote sustainable and climate-smart livelihood strategies for women.[13]

33. Some CVFs have used the RUF to support extension work with farmers. In Kenya, a CVF who had undertaken research on sweet potatoes used RUF support to engage policy makers, particularly the Ministry of Agriculture and the Kenya Agricultural and Livestock Research Organisation (KALRO), on the uptake of new sweet potato varieties, and to conduct outreach work with farmers. RUF support was used to pay for transport, printing brochures (see Annex 2) and facilitating a policy meeting. The original research helped identify which varieties of sweet potatoes were most suitable for extension. Recommendations on which varieties are most suitable for extension have been proposed to KALRO and are awaiting approval from the Ministry of Agriculture.

34. Several of the activities were designed to influence policy changes. Policies or projects that were under development were identified, and the CVFs set out to influence the process with the findings of their research. For example, in Kenya a grant was made to support policy round tables to highlight the importance of gender in climate smart agriculture practices at the time when Kenyan agricultural policy was being developed and devolved.

35. In Ghana, a CVF who had undertaken research on how gender influences how farmers mitigate and adapt to climate variability, used the RUF to support a symposium to present and discuss the research findings.[14] The 57 participants included staff from the Ministry of Food and Agriculture (MoFA) and Ministry of Forests, extension officers and farmers, and staff of the Ghana Meteorology Agency and the Environmental Protection Agency. Follow-up work will include designing a manual on adaptation strategies for farmers and training workshops for farmers in the transitional zone. Based on the Action Plans developed by the respective districts, the Centre for Climate Change and Gender Studies will facilitate an action research proposal for a transitional-savannah climate-smart agriculture project.

36. There is also evidence of policy influence and responsiveness to information needs at country level about climate policy. This has been achieved through CVFs converting their research into policy briefs, information sheets, sharing research in forums and disseminating research findings at the Conference of Parties, and Sustainable Development Goal forums.

37. In future, a more structured approach should be taken to assessing the effectiveness of the RUF. This would involve applications to the RUF including the outcomes sought with proposals on how the outcome would be assessed.

38. The indicator for research impact is the 'number of researchers connected with the project contributing to Africa sub-regional and global knowledge through invitations to speak or make poster/oral presentations at climate related conferences and events,' with intermediate and final targets of 30 (2017) and 50 invitations (2018).

39. CIRCLE has not collected data on this indicator. However, it does record attendance (rather than invitation to) conferences. 60 CVFs from cohorts 1 and 2 have between them attended 208 events and/or conferences. It seems very likely that the

[13] Research Uptake Discourse on Women, Entrepreneurship Development and Climate Change, see: http://bit.ly/RUF_Women.

[14] See; http://bit.ly/3CGS_Symposium

outcome target of 30 (2017) and 50 (2018) CVFs being invited to present at climate change conferences will be met.

40. Given the proviso that the project is still being implemented, and that evidence of the impact of the research is limited, it is reasonable to conclude that CVFs are producing more and better quality research than non-CVFs, with most of it being published in reputable journals. Some dissemination work is taking place, both locally using the RUF and internationally via conferences and symposia. However, it is too early to assess whether the research funded by CIRCLE is having an impact and exerting leverage over policy and project design.

Institutional Strengthening Programme

41. The ISP uses an approach that was developed for research institutions in the UK. Institutional champions, a gap analysis and the development of an Action Plan are used to strengthen the management of early career researchers. The success of the ISP depends on the capacity of the home institution to dedicate staff time to preparing and implementing the plans and the seniority and status of the institutional champion for the ISP component.

42. The lack of funding for implementation, and constraints on the time of senior staff who are responsible for driving implementation can be a constraint on the implementation of Action Plans. It has not been possible to detect any impact on the performance of the home institutions. A review of the approach and the allocation of resources to support implementation is recommended. An implementation fund has been established to support implementation of the Action Plans, and progress and the impact of the fund should be monitored.

43. Indicators and targets for the improved performance of the individual Home Institutions (HI) should have been developed by each HI during the development of their Action Plans. Each HI could then have reported on progress against these. In their absence, assessment of progress with the ISP has relied on anecdotal reporting of activities and events surrounding the preparation of the ISP. In the final year of the project the ISP component should consider helping Home Institutions develop a monitoring framework for their Action Plan. This framework should include indicators of research capacity. Home Institutions should then report progress against this framework by the end of the project.

44. Greater attention needs to be given to the institutional capacity of home institutions and whether they have the resources needed (staff and budget) for their contribution to the institutional strengthening programme. Action Plans should include the resources of the Home Institution that will be needed to implement the Action Plan and the likelihood of these being available. Additional support to help Home Institutions implement their Action Plans is planned for the final year. This implementation fund to support the implementation of the ISP Action Plans should be reviewed in the final year.

45. The approach to institutional strengthening by the project is extensive rather than intensive, with a relatively light input into each institution and a reliance on the home institution to maintain momentum between the times when the project engaged with them. The speed with which home institutions have made progress with the ISP component has varied. A key factor in the rate of progress has been the sustained engagement of senior champions in the home institution and the involvement of central institutional administrative leaders and budget controllers. Where this has happened,

progress has been faster. Where the ISP champion was recruited from within a single faculty it has proved harder to secure institutional-wide support for the ISP component.

46. Some institutions have created teams involving cadres of staff across the institutions (finance, human resources, teaching departments) while others are taking a narrower approach involving either the concerned department or faculty. Others have taken steps to establish climate change institutes or centres.

47. To guide ISP implementation, champions were presented with the 'ISP tool kit'. The 'tool kit' contains a gap analysis framework template, a SWOC (strengths, weaknesses, opportunities, challenges) analysis template, an ISP planning tool, guidance on building an ISP Action Plan, as well as an ISP Action Plan implementation monitoring tool.

48. The costs of ISP workshops have averaged approx. £80k each. Following these workshops, all institutions have now completed Action Plans. 22 institutions have reported the following activity:

- 14/22 have undertaken a review of mentoring provision at their institution
- 9 institutions have run workshops on mentoring in the last year
- 9 institutions have development policies/frameworks for mentoring as a result of CIRCLE input
- 10 institutions are developing a new or strengthening an existing programme focused on the management of research staff
- 11 institutions have introduced or adapted policies or strategies because of the ISP on areas such as mentoring, plagiarism, sexual harassment, staff development and appointment and promotion policies
- 17 institutions reported running events because of the ISP. These include induction and mentoring programmes and courses on preparing research proposals

49. This demonstrates a reasonable response to the ISP component, in terms of activity. However, it is harder to draw conclusions at this stage on the impact of this activity. What appears to be happening is that changes that do not require additional resources are being relatively easily implemented. For example, establishing a mentoring scheme can be done largely within existing resources. Similarly, policies on gender equality and promotion can be changed relatively cheaply. However, any changes that entail additional training or consultancy support, or require a significant input of senior staff time are harder and take more time to implement.

50. Some of the ISP champions that were interviewed identified activities that would benefit early career researchers across the institution, but which could not be provided because of the costs. For example, training in proposal writing and research management, which the CVFs valued highly, cannot easily be provided without additional resources, which home institutions rarely have.

Action Plans

51. Within the Action Plans, actions have been categorised into the following areas:

Table 4: List of Actions described in ISP Action Plans

Area	Action taken
Recruitment & Selection	Developing/creating/enhancing recruitment policies Recruitment strategies Interview panel training Continuity of employment Promotion mechanisms Salary review
Recognition and Value	Promotion & reward opportunities Performance management, appraisal and development Equal treatment, irrelevant of contract type Continuity/Stability of employment Pay progression
Support and Career Development	Attractiveness of research positions Transferable skills training Career management advice & development Policies & procedures for promotion Induction Articulation of skills required Mentoring CPD activities Training and support for teaching Researcher input to policy & practice
Researchers' Responsibilities	Researchers' develop capacity for independent thought Knowledge exchange Ethics Training needs analysis Personal development plans (PDP) & Continuous Professional Development (CPD) Career information
Diversity and Equality	Recruitment Policies Training Flexible working Paternity/Maternity Personal circumstances (including language) Bullying & Harassment Women in science
Implementation and Review	Implementation Monitoring

Researcher Development Framework (RDF)

52. The RDF is an element of the ISP focused on the individual researcher. The ISP also works to expand the use of the RDF as best practice in the management of researchers' careers in the Home Institutions.

53. The RDF is a competence framework based on interviews and focus groups with over 100 researchers and advice from specialists and other stakeholders. The framework has been validated by an external independent advisory group of experts and established researchers. The resulting competence framework sets out the knowledge, behaviours, personal qualities and attributes that the higher education sector has identified as significant for researchers.

54. The RDF was designed for planning, promoting and supporting the personal, professional and career development of researchers in higher education in Britain. It has been designed to be used by individual researchers and the people who support them. It plays a central part in the package of support given to CVFs to help them better manage and develop their careers. The intention is that the ideas and approach that underpin the RDF would be adopted and spread more widely in the home institution through the ISP component.

55. The implementation of the RDF depends on the capacity of each institution to take forward the work and the willingness and ability of champions to support change. The pattern that seems to be emerging, which is similar to the conclusions on the broader ISP, is that progress is swifter in institutions where there is support from not just the faculty, but also the administrative leaders of the university. Securing support from the administrative as well as the academic leaders in the home institutions and making this a condition of continuing involvement in the project could help improve performance.

RDF resources and materials

> *"The RDF planner is good. But there are funding challenges with researcher development workshops and training. Lack of funding is preventing a full activation and implementation of the ISP at the home institution"*[15]

56. Whilst the RDF Planner is an online planning tool for which a subscription is normally required(paid for by the project for up to a year after the project has been completed), this is only one of the resources that the CIRCLE institutions can access to support their use of the RDF. All resources can be downloaded and access to the toolkit will not be removed on completion of the fellowship. Some interviewees did however suggest that they would reduce their use of the RDF when project support came to an end and that institutions would struggle to find the resources to continue the subscription after project support ended.

57. The Circle project team recognises this challenge as well as that of access to the internet by the CVFs and their Home Institutions, and has provided offline access to a Personal Development Plan (PDP). At the end of the contract, CVFs can download their records in various formats so that they can continue to use the PDP to manage their personal development. The benchmarking resources which were developed specifically for CIRCLE as part of their training will also remain useful in continuing PDP activity with or without the subscription.

58. In addition to the ISP tool kit, there is an RDF tool kit available to RDF coordinators and champions/leads, which was introduced to them at the champions' meetings and is also on Basecamp.[16] The tool kit, which is provided at no cost to institutions as part of CIRCLE includes videos on professional development planning, activity guides for trainers to run activities themselves in sessions, researcher videos which researchers can use independently or which trainers can use for their PDPs, as well as a pack of RDF development cards. The Training of Trainers (ToT) toolkit is available for mentoring and creating institutional training projects using RDF.

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[15] Comment by one of the home institutions, cited in CIRCLE Annual Report 2016-17, page 12.

[16] Basecamp is a web-based system for CVFs and Institutional Champions to share information and their experience with the project.

59. The RDF Planner reports can be used to inform mentoring and performance management as the data is owned by the researcher and shared with the institution, mentor, supervisor, colleague. As part of the ISP, institutions can use the RDF to prioritise/create new opportunities for their researchers, by using results of the RDF to analyse performance, and map what is missing. The 2nd ToT in Ghana provided a guide for institutions to create sessions based on an RDF descriptor. There is also a tool kit available for creating sessions to use the RDF to train mentors and manage mentoring conversations. For example - the ToT in South Africa trained mentoring coordinators in the use of the RDF for mentoring - a tool kit is available which includes a mentoring lens on the RDF created by ToT participants.

60. CVFs found the RDF a useful tool during their fellowship. However, not all of them continued to use it once their fellowship was completed. Most interviewees said that they used it reasonably frequently during their fellowship, but much less so afterwards. However, there are examples of the RDF being adapted and used in Home Institutions by researches who were not included in the CIRCLE programme. For example, CVFs who had responsibility for supervising research students introduced them to the RDF and encouraged them to use it.

61. The reasons for the RDF not being used frequently beyond the fellowship are hard to identify. It may be a combination of the complexity of the RDF and the need for some experience in training people in the use of competence-based approaches to management. It is recommended that the ISP component reviews whether more general training in the use of competence-based performance management tools is needed to support the implementation of the RDF in the Home Institutions.

Achievements to date

62. At the champions' meeting in December 2016, institutional champions mapped the RDF to their mission and strategic priorities to enable institutions to focus training and development resources on specific strategic areas for the institutions. They also evaluated their achievements so far and established that:

i) Generally, many of the milestones had been achieved including the development of work plans (27 Action Plans developed out a target of 15 by 2017). Fourteen institutions had undertaken a review of mentoring policies, and nine of these had developed policies/frameworks for mentoring. Eleven institutions had introduced or adapted institutional strengthening policies or strategies and 17 institutions had run training events related to the ISP.

ii) CVFs are encouraged to participate in leadership roles and there is evidence of this especially from Cohort 1. Some of the CVFs are already participating as mentors and supervisors, which augments institutional strengthening.

Challenges

63. Institutions are not at the same level of ISP implementation. Some institutions have been slower than others in the implementation of their Action Plans and cited challenges relating to resource availability. Some cited bureaucratic obstacles, for example when champions are not part of the senior management team. In some cases, changes in senior officials at the institution (such as Vice Chancellors or New

Directors of Institutes) has led to a decrease in activity and implementation of the Action Plan, as new staff need time to understand and re-approve the Action Plan.

64. The need to maintain the commitment and interest of senior staff in implementing the Action Plan and provide momentum to the ISP at HIs was noted in the 2015 annual review. The project responded to this observation by ensuring there was ongoing communication via basecamp with CIRCLE champions and stressed the importance of senior leadership support and the involvement of some senior leaders at the ToT workshops. The project also undertook direct consultancy and communication with champions.

65. In some of the Home Institutions there is not a culture, nor an expectation, of collaboration between staff. The mentoring and support of junior researchers by senior staff is also uncommon. A change in the management culture is required to change the way that the careers of younger researchers are managed and supported by senior staff. The RDF and ISP process seeks to promote this change in the management culture.

Gender Equality

66. CIRCLE had a target of ensuring that at least 50% of the CVFs were women, although the business case did not set out the measures to be used to achieve this. The difficulty of reaching this target was highlighted in the inception review. For cohort 1, 39% of the applications were from women, and 44% of the awards made were made to women.

67. The inception review recommended that efforts should be taken during the selection process to ensure that sufficiently qualified female and doctoral fellows were appropriately represented. The project team followed up by requiring home institutions nominating more than one fellow to ensure that at least one of their nominees was female. Home institutions were told that if they could not nominate at least one female candidate then the project would not accept more than one nomination. Nominating home institutions that did not nominate a female candidate without adequate justification were also told that it would adversely affect their application. In addition, the project adjusted the eligibility criteria for women. Women candidates were eligible for up to 7 years after completing their PhD so as not to exclude women who had taken a career break to care for children.

68. There were also interventions targeted at women. A proposal writing workshop for potential female applicants to cohort 3 was held in February 2016. The workshop was attended by 42 participants from 23 institutions (including three female staff members from AAS). The objectives were:

i) To improve quality of proposals to cohort 3 of the CIRCLE project

ii) To advise early career researchers on formulating research questions and drafting research proposals

69. Between them these measures helped to increase the proportion of female applicants and by the time cohort 3 had been recruited the project had achieved its target of 50% of the CVFs being women. 70% of the Cohort 3 applicants who attended the proposal writing workshop were successful in their application for a CVF.

Table 5: Gender distribution of CVF applications and awards, by Cohort

	Applications		Awards	
	Men	**Women**	**Men**	**Women**
Cohort 1	95	61	19	15
Cohort 2	36	26	17	15
Cohort 3	39	50	16	23
Total	170	137	52	53
	Applications		**Awards**	
	Men	**Women**	**Men**	**Women**
Cohort 1	60.9%	39.1%	55.9%	44.1%
Cohort 2	58.1%	41.9%	53.1%	46.9%
Cohort 3	43.8%	56.2%	41.0%	59.0%
Total	55.4%	44.6%	49.5%	50.5%

70. CIRCLE has achieved its targets for recruiting women. Any future project should also have targets for the recruitment of women, and use the same range of measures to ensure high rates of successful applications from women.

Comparison with the African Climate Change Fellowship Programme (ACCFP)

71. Similar in concept to CIRCLE, the African Climate Change Fellowship Programme (ACCFP) supports African professionals, researchers, educators and graduate students to enhance their capacity in climate change adaptation in Africa. The ACCFP fellows are provided with a research grant and an attachment to a "Host Institution." The fellows undertake research on a range of climate change topics. These include the assessment of climate risks, approaches to adaptation and integrating adaptation into policies and the plans to implement those policies. They also work on integrating climate change and climate change adaptation into university courses. The aim is to produce a cadre of climate change specialists who can promote and facilitate adaptation research, education, and decision making across Africa.

72. The programme began in 2007 and is now in its third phase. In phases 1 and 2, more than 90 fellows were supported. Phase 3 will provide a further 30 fellowships. The thematic areas supported under ACCFP phase 3 cover water, gender, green growth and the economics of adaptation options.

73. ACCFP differs from CIRCLE in that the fellowships are more varied, and last from a few months to 18 months. In addition to science fellowships for early-career research fellowships including for Doctoral and Masters students, policy and training fellowships are offered to policy makers and university lecturers. Science fellowships support research and an attachment to a host institution for up to a year. Policy fellowships, which are for African practitioners working on policy issues related to climate change adaptation, includes a 2-week period of intense training followed by

desk work research activities to engage policy makers over a four-month period under the supervision of a mentor.[17]

74. CIRCLE outperforms ACCFP in the recruitment of women fellows. ACCFP does not provide a breakdown between men and women of fellowships awarded for phases 1 and 2, although there is data on the applicants. In phase 2, out of 218 applicants for fellowship, only 45 (20%) were from women. Although geographic and gender balance was a consideration in awarding fellowships, it is highly unlikely that ACCFP achieved the same gender balance as CIRCLE.[18] In phase 3, 29 fellowships have been awarded, 9 (31%) of which were awarded to women.

The Theory of Change

75. The CIRCLE business case set out the problem that the project intended to solve. In brief:

i) Africa will be the continent that will be the first and worst affected by climate change

ii) However, there are uncertainties about the nature and scale of the changes in climate that will take place

iii) Improving understanding of the likely changes and their impact is essential to develop effective responses. And although prevention requires global action, measures to mitigate the effect of climate change need to be developed locally. The role of *local* researchers is critically important – including their ability to influence local, national and regional policy and implementation

iv) But the capacity in Africa to undertake climate research and influence is weak and needs to be strengthened

76. The project focused principally on tackling iv) – the capacity to undertake research. Although there were Masters and PhD scholarship projects for people at the beginning of their careers, there was less support for early career development. The project focused its efforts on this area.

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[17] Policy Fellowships were awarded to candidates working in organizations with a potential to influence decision-making pertaining to climate sensitive sectors in Africa. The fellowship duration was 6 months or less and carried a maximum grant award of US $8,000. Teaching Fellowships were for University level educators to enable them to integrate climate change related topics into their curriculum. Fellowships lasted 2 months or less and carried a maximum award of US $5,000. Doctoral Research Fellowships for doctoral level students conducting research in climate change risk and adaptation at an African University. Fellowships lasted 12 months or less and carried a maximum award of US $16,500. Post-Doctoral Fellowships were for candidates with doctoral degrees in fields relevant to climate change and climate change adaptation. Fellowships lasted 18 months or less and carried a maximum award of US $36,000.

In phase 3, the Policy fellowships were changed and now comprise a 2 week course at the Advanced Policy Training Institute followed by a period of applying research to policy in their home department or institution. The Fellowships are for (i) Policy makers;(ii) Professionals from government ministries; or (iii) Researchers who have active and existing links with the policy environment and policy actors. Each Fellow is a grant of $1,500 after the two-week training to conduct desk work research activities and initiate the process of engaging policy makers in various ways over a four-month period, under the supervision of a mentor. Policy Fellows will be brought together again for a one week consolidation period where they present their work and finalize on it with their mentors, before they return to their Home institutions to produce a final report within a month. An honorarium of $1,000 is given to Fellows on successful completion of their projects.

[18] ACCFP 2013: The African Climate Change Fellowship Programme, - Phase II. Final Technical Report, 2010 – 2013. See page 28-30. Available at: http://bit.ly/ACCFP_FTR2013.

77. Risks and assumptions were not developed in the original Theory of Change (ToC). Key risks and assumptions not considered were i) obstacles to recruiting female CVFs; ii) whether there are enough potential home institutions with sufficient capacity to be considered candidates for the institutional strengthening component; iii) the availability of funding for climate research once CVFs had completed their fellowship, and their ability to access it; iv) the timeframe for the publication of research findings being sufficiently short enough to enable results to be seen during the programme and within a short period of its completion.

78. The project responded to these risks during implementation. The obstacles to recruiting women became clear during the recruitment of the first cohort of CVFs. The project responded by developing a set of measures to increase the participation of women. These proved successful and the project achieved its target of 50% of the fellowships being held by women.

79. The ability of home institutions to take part in the ISP component was assessed during the selection of home and host institutions. The expectations of home and host institutions were set out in the ToR (Annex 7) and the selection procedure ensured that partner institutions selected had made a commitment to strengthening their management of early career researchers. More recently an implementation fund to support the implementation of Home Institutions' Action Plans has been established. Reports on progress were however not available during the period of the review. . CVFs have also proved relatively successful in securing funding for further research. CVFs from Cohort 1 and 2 have between them secured £1.0m in research funding since returning to their home institutions.

80. The project reported on implementation risks in the annual reports, and action taken to mitigate them. These included currency risks, the risk of CVFs dropping out and staffing changes within the project implementation team.

81. A full assessment of the availability of non-CIRCLE funding for climate change research and the access to it by CVFs has not been undertaken due to the limitations on the scope and budget for this review. However, there are signs that CVFs are managing to secure research funding following their fellowships. Any potential future funding to CIRCLE should consider other funding opportunities CVFs have and how the programme could help CVFs access them (see other recommendations to consider section).

82. The experience so far with publications is that although lead times vary, it can take up to a year and sometimes longer following a fellowship for research to be published in a reputable journal. Furthermore, rapid publication is no guarantee of quality. Slower publication in a reputable journal is more effective than rapid dissemination of results via a less reputable route. Preliminary findings can be presented at conferences, and published later. The original logical framework did not include a quality threshold for publication apart from the requirement that the publication is peer-reviewed. A more stretching target would be for all research to be published in journals on the SJR list and at least 2/3^{rds} are in journals in the top two quartiles of the SJR.

83. In a future project, a comprehensive risk framework should be drawn up at the outset and monitored consistently throughout the project.

84. A revised theory of change, which should be developed in the event of a successor project should include:

i) More consideration of the obstacles to women applying successfully for CVFs;

ii) Greater attention given to the institutional capacity of home institutions and whether they can mobilise the resources needed (staff and budget) for their contribution to the institutional strengthening project;

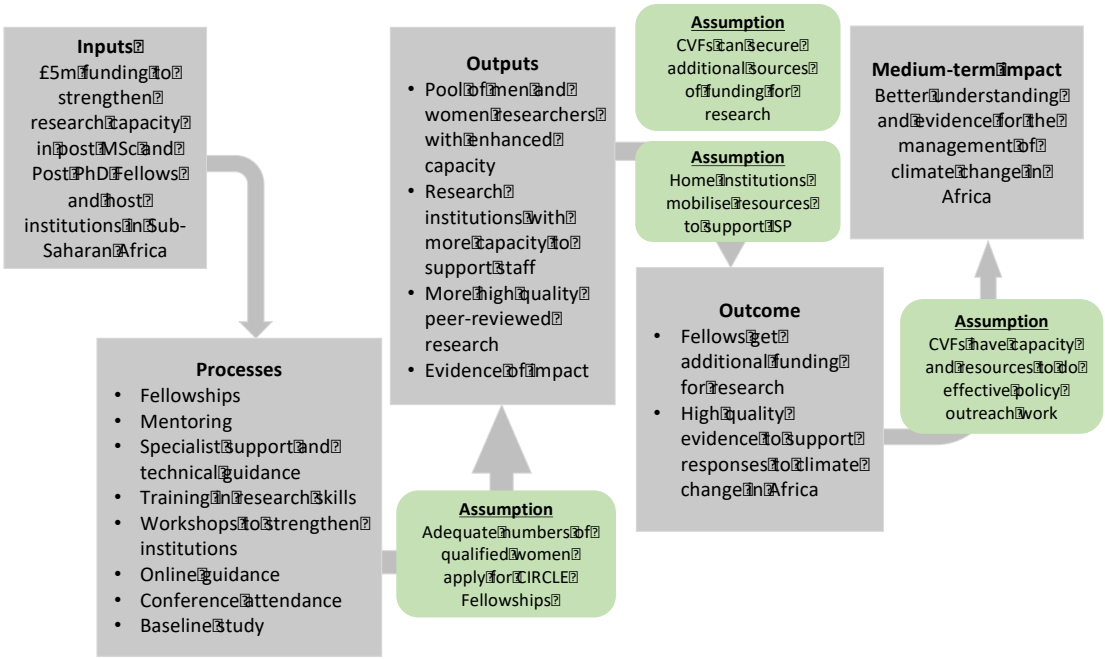
iii) Attention to the need for CVFs to continue getting access to research funds after their fellowship;

iv) Increasing support for outreach and communication to ensure that African climate research can influence African policy making on climate change.

85. The absence of a baseline, indicators and targets for institutional strengthening in the Home Institutions involved in this component has made it difficult to assess the contribution the project has made to improving the performance of the Home Institutions. In the future, the development of Action Plans by the Home Institutions should include the setting of indicators, targets and milestones for improved institutional performance. These would be set by each Home Institution and then reported on by the Home Institution.

86. Proposed revisions to the Theory of Change are illustrated in Figure 2.

Figure 2: Summary of theory of change with suggested additions (in green)



Value for money

Original VFM proposition

87. The VFM proposition in the Business Case hinged on:

i) Project management costs were expected to be 10% of the overall budget. CVF costs would be 60% of the cost of similar fellowships for tenure in Europe or the Americas.

ii) The project activity focused on CVFs and institutions in developing countries in Africa rather than by bringing people (CVFs and the leaders of their institutions) to courses and institutions in developed countries. This approach intended to keep costs down and increase local ownership of the institutional strengthening component by placing much of the responsibility for delivery with partner institutions. This approach aimed to increase the sustainability of the ISP component.

iii) The selection of the two implementing partners (ACU and AAS) was based on their track record in managing research capacity strengthening projects, their institutional networks and credibility in Africa and within the research community.

iv) The subsequent use of a competition, run by ACU and AAS to select NRI as the international centre of excellence to quality assure the outputs, and the use of competition to select CVFs and partner institutions aimed to drive costs down. It would also ensure that the most promising CVFs and partner institutions most likely to benefit from the ISP component were selected for the project.

Economy

88. The project has met the two original VFM propositions for economy: that the fellowships would cost less than 60% of equivalent fellowships in Europe, and that management costs would kept to below 10% of the total budget.

89. Management costs have been kept below the expected level - overall management costs were 5% in 2015-16 and 5% in 2016-17. Management costs were kept down by economising on travel for ACU staff and efficiency savings through the scheduling of steering committee meetings.

90. The average cost of a CVF fellowship is £32,500 (this does not include Quality Assurance). The estimated costs of an equivalent fellowship in a developed country are approximately £54,100. These higher costs are mostly related to the need for a larger stipend to account for higher costs of living, accommodation and travel between Africa and Europe.

91. Beyond the achievement of the original VFM proposition, the project managers have used negotiation, bulk purchasing and other steps to reduce the unit costs of inputs. These include:

i) The use of charity travel agencies and negotiating with airlines to obtain competitive rates. Quotations of UK and African agents are compared to obtain most competitive rate. For example, for CVF workshops, a 40% discount on the costs of air travel was secured by negotiation with Kenyan Airlines.

ii) Negotiations with hotels for conferences secured reduced rates. For example, for one of the CVF workshops, hotel costs were reduced to £77 per head, a saving of £53 (41%) over the cheapest publicly available rate.

iii) Steering committee meetings are either held at the ACU or AAS and VFM is taken into consideration in determining location. In 2017, the Steering Committee meeting coincided with another event that the Executive Director of AAS was attending in Paris and therefore could attend the London meeting by travelling with Eurostar (at a much lower cost than flying him from Nairobi)

iv) Reducing the subsistence allowances from $50 to $30 in 2015. For the ToT workshop, the project did not provide a DSA opting for a dinner package at the hotel – although this is not practical for all workshops.

v) Forward purchase of US dollars to avoid the impact of the falling value of sterling following the EU referendum in 2016, resulting in savings of £35,000.

92. Examples of the estimated budget cost and the actual expenditure after savings of the last set of CVF workshops can be seen in Table 9 (Annex 4, page 67[19]).

Efficiency

93. Efficiency is how well the programme converts inputs into outputs. The fellowship scheme seems to be efficient compared to other research programmes that are funding fellowships. To make a proper assessment of the efficiency of the project the quality and quantity of the outputs must be assessed as well as the cost of the inputs. Based on the cost per CVF of £32,500, the project is cheaper to deliver than an equivalent project using UK-based institutions as host institutions. However, this does not fully take account of the quality of the outputs of the fellowship scheme i.e. a low-cost fellowship scheme that produces low quality research may be less efficient with than one with higher unit costs but which produces higher quality research.

94. The most useful data to consider the quality of the outputs is the publication record of the CVFs. The project's logical framework has an indicator and targets that includes both quantity and quality. The target for 2017 was 43 fellows contributing to research papers that have been submitted for publication in peer-review journals, published books or are cited in policy documents. This target was met.

95. In addition, a comparison of the publication record of CVFs to that of non-CVFs shows that CVFs appear to have a better publication record than people who are not part of the project.[20] Data was collected from: CVFs in cohorts 1 and 2; applicants for cohorts 1 and 2; respondents to two surveys sent out to researchers at the home institutions of cohort 1 (who were not CVFs) and to researchers not from CIRCLE institutions who expressed an interest in participating in the programme during the inception phase.[21]

96. Some of the results from the survey are set out in Table 6. Interpreting these figures requires some caution as the CVFs were selected because of their potential as researchers and the comparison group included people who had been rejected by the project. Thus, not all the difference in the figures can be attributed to the project and may only show that the selection of CVFs was effective. However, they appear to indicate that CVFs as a group produce more good quality peer-reviewed publications

[19] Removed due to open access publication and data protection purposes.

[20] CIRCLE 2016: *Comparison of CVFs to counterfactual and applicants*. CIRCLE Project Report.

[21] Respondents from home institutions were filtered so that any responses from CVFs cohort 1 or 2 were removed

than early-career researchers who are not part of the project. The lower figures for cohorts 2 and 3 are because of the lead time for publications, especially in high quality peer-reviewed journals. The publication ratio for cohorts 2 and 3 should therefore rise over the next couple of years.

97. The publication record of the ACCFP appears to be better than CIRCLE, with 17 out of 26 respondents indicating that they had co-authored at least one peer reviewed publication.[22] However, this difference is likely to be attributed to the fact that ACCFP has been operating for longer.

Table 6: Comparison of publication record of CVFs with non CVFs (data from a survey in Sept 2016)[23]

	Number of publications / size of group			
	CVFs		Comparison group	
	Number of respondents	Number of publications	Number of respondents	Number of publications
Cohort 1	34	12	156	8
Cohort 2	33	6	72	5
Cohort 3	39	5	90	6

98. The quality assurance and mentoring costs of the CVF component were 15% of the costs (Table 7).

Table 7: Breakdown of CVF Costs

Fellowship costs	Spending	Share
Fellows' Travel	£56,738	2%
Mentoring	£91,912	3%
Publishing support	£123,211	4%
Conference and Training Fund	£204,693	6%
Research Grant	£414,397	13%
Stipend	£915,595	28%
Bench Fee	£140,709	4%
Accommodation	£450,150	14%
Research uptake grant	£119,067	4%
Management	£344,892	11%
Quality Assurance	£392,793	12%
Total	**£3,254,158**	
Average cost per fellow	**£32,500**	

99. It was not possible to find comparative mentoring and quality assurance costs for similar projects. These costs can be interpreted as comprising the principal contribution to enhancing the quality of the research outputs. It is too early to calculate a final figure of the cost per publication as most of the publications for cohort 2 are still in preparation and the CVFs in cohort 3 have only just embarked on their fellowships.

[22] Ng'ang'a, W. & Wausi, A. 2015: Evaluation Report of the "Africa Climate Change Fellowship Program" Project Phase II, March 2015. See page 35. Report available at: http://bit.ly/ACCFP_Evaluation

[23] This data is from the responses to a survey in 2016, whereas the data in Table 3 is from returns to the project managers as of April 2017. The inconsistency is because the data is from two different sources at two different times. In table 3 peer reviewed publications are counted, whereas in this table all publications are counted.

Based on the total costs of cohort 1 (including a share of quality assurance) producing a total of 29 peer-reviewed publications, the cost per peer-reviewed publication so far is £32,000. This should fall as the number of publications increases.

Effectiveness

100. The CIRCLE programme is an effective programme; it has achieved and in some cases overachieved on some of the programme outcomes. Assessing effectiveness involves setting the outcome against the cost of achieving it. The outcome of the project is "high quality researchers in African Research Institutions accessing research funding opportunities and generating internationally recognised knowledge and evidence to respond to climate change impacts in Africa."

101. The first indicator for the outcome is *'number of researchers connected with the programme contributing to Africa sub-regional and global knowledge through invitations to speak or make poster/oral presentations at climate related conferences and events'*. The milestones and targets for 2017 and 2018 respectively were for 30 and 50 researchers to have been invited to speak at conferences – 50% of the CVFs.

102. The project has detailed data on conference attendance, training, publications, and additional research funding (although on attendance rather than invitations to conferences). So far 60 CVFs have attended a total of 208 events at which 93 presentations have been made by 48 CVFs. It appears that the end of project target for attendance and presentation of research findings has already been met and is likely to be significantly exceeded by the end of the project.

103. Almost a third of events where cohort 2 fellows presented were organised by their host institution. The rest of the events were organised by a combination of home institutions, and a research society with a research focus relating to the research being done by the CVF. Most of the events were in CIRCLE countries, but 9 were in the USA or Europe. Attending events in the host or home institution is more cost effective than attending events in Europe or the USA, subject to the event being well-organised and attended by sufficiently experienced and senior researchers from elsewhere.

104. The project spent approximately £62,800 on conference and training support for cohort 1. If this is shared across all the conferences and training events attended during the fellowship year it amounts to an additional contribution of about £334 for each event attended. This does not include the stipend costs of the fellows. It shows that the additional costs of helping CVFs attend conferences and training costs were relatively modest compared to the overall cost of the fellowship.

105. In the interviews with CVFs other benefits of attending conferences were identified, in addition to providing the opportunity for research findings to be disseminated. These include providing CVFs with development opportunities. CVFs identified improving confidence, organising and presentation skills, increasing knowledge, providing networking opportunities, and opportunities to form and join collaborative research teams as the principal personal benefits they gained from attending conferences.

106. Beyond attendance at conferences, CVFs from cohort 1 have secured £282,000 in research funding since returning to their home institution. From cohort 2, CVFs have secured £752,000 in further research funding. One CVF has been involved in a proposal that has been awarded $675,000 from the Netherlands Enterprise Agency (RVO.nl,- to research Water, food security and climate change in integrated

watershed management approaches. A second CVF has been involved, together with other CVFs, in a proposal that has been awarded $120,000 from the World Diabetes Federation to conduct implementation research activities for a Diabetes Prevention Programme in the Niger Delta Region.

107. The second indicator of the outcome was to be an evidence paper assessing the impact of the CIRCLE programme on research capacity at the home institutions. It is too early to assess the impact of the project on the research capacity of Home Institutions. Also, without a baseline assessment of research capacity before the project with an agreed set of indicators of research capacity in each Home Institution it will not be possible to arrive at a definitive conclusion of the impact of the project on research capacity. However, there are some indications that capacity is being developed, and some of this can be attributed to the project. 28 institutions have completed their Action Plans – all but one of the institutions taking part in the ISP.

108. Indicators and targets for the improved performance of the individual Home Institutions (HI) should have been developed by each HI during the development of their Action Plans. Each HI could then have reported on progress against these. In their absence, assessment of progress with the ISP has relied on anecdotal reporting of activities and events surrounding the preparation of the ISP. In the final year of the project Home Institutions should develop a monitoring framework for their Action Plan that includes indicators of research capacity and then report progress against it.

109. Beyond having an Action Plan, 21 home institutions have strengthened their research capacity and are applying that capacity to policy making. These include having mechanisms to form links with decision makers and the end-users of climate research and developing cross-cutting climate change research groups, centres or mechanisms for sharing climate change research within their institutions or with other institutions.

110. Two examples of new research centres that have been established by returning CVFs are the Centre for Climate Change and Gender Studies (3CGS) and the Earth Observation Research and Innovation Centre (EORIC) at the University of Energy and Natural Resources in Ghana.

111. 3CGS coordinates, facilitates and disseminates research and development related to the intersection between Climate Change and Gender. Since its establishment in 2016 it has offered courses in data analysis, research methods, proposal writing and research management. It has also run a symposium bringing together researchers and practitioners to discuss challenges, success stories and best practice in climate change adaptation and mitigation in the transitional and savannah zones of Ghana.

112. EORIC is headed by a CVF from cohort 1. It facilitates and supports the acquisition and application of geospatial technologies in interdisciplinary research and education in areas of water, disasters, energy, climate, agriculture, ecosystems, weather health and biodiversity. It runs courses on a range of subjects including climate data management and applied satellite technology.

113. Overall, there is evidence that capacity is being developed, and that the capacity is being used to improve the management and delivery of climate research. It is not possible to attribute all the improved performance to CIRCLE. Nor at this time is it possible to assess by how much research capacity has been enhanced because of the project. However, it is a reasonable conclusion that some of the improvements

in the management and application of climate research are a result of the project activities.

Conclusions and Options for the Future

Conclusions

114. The CIRCLE model of supporting early career fellowships alongside support to their home institutions has proved largely successful. It compares favourably with the ACCFP, and has out-performed ACCFP on the gender balance of fellowships. Targets for CVF publications and conference attendance have been met, and it is likely that the project will achieve all its targets and intended outcome.

115. By the end of the project in 2019, 98 people will have completed their fellowships, and more than half of them will be women. The CVFs have already published over 33 peer-reviewed articles in internationally recognised journals. 27 Action Plans have been prepared setting out how the institutions intend to strengthen their management of researchers' careers. Many CVFs are now involved in improving the management of their home institution. The project has met its original value for money proposition.

116. Progress with the institutional strengthening component has been more mixed. The ISP component has a lighter touch than the fellowship component. The bulk of the inputs consist of one-week workshops for institutional champions, targeted consultancy support, with follow up by the CIRCLE consultancy team. Maintaining momentum with the ISP component depends on continuing engagement by senior staff at the home institution. Where this has been the case, good progress has been made. In a successor project, more attention needs to be given on how to support institutions where getting senior staff consistently engaged with the project has proved harder. A successor project should look at how to create incentives for this engagement. Some additional resources for the implementation of Action Plans should be considered, alongside a requirement for Action Plans to include a budget that sets out what additional resources are needed to implement the Action Plan.

117. In addition, steps should be taken in the final year of the project to assess the impact of the ISP component in a selection of Home Institutions. This could be based on an assessment of progress against the Action Plans. Although the Action Plans do not have indicators with targets and milestones, an assessment could be made of the extent to which the plans have been implemented.

118. Based on these conclusions, there is a case for continuing to provide support to improve the quality and impact of climate research in Africa. Options for the future include: i) Extending the project to provide another cycle of research fellowships for the existing institutions and continuing to provide advice on institutional strengthening; ii) Expanding the project to cover new institutions; iii) Expand the range of support to include follow-up support for the CVFs and institutions by providing funding for collaborative climate research and support for the implementation of the Action Plans for improving the management of research institutions.

119. Going beyond climate change, there is a case for considering whether a successor project could include supporting the integration of climate change into broader research streams in research institutions. For example, ensuring that agricultural research becomes climate aware as a matter of course. The earlier phases

of ACCFP included Adaptation Teaching Fellowships for educators working in African universities to design, develop and/or expand curricula related to climate change and climate change adaptation, although these fellowships were not continued in phase 3.

120. The need to strengthen the link between climate research and climate policy making also merits further consideration. CIRCLE is explicitly aimed at increasing the capacity for climate research and focuses on early career researchers. ACCFP included in its fellowship schemes 'Adaptation Policy Fellowships.' These were short-term fellowships involving an intense 2-week training session at an advanced policy training institute, followed by a four-month period where the lessons would be applied back in their home organisation. The fellowships were aimed at policy makers and professionals from government ministries; or researchers who had active and existing links with the policy environment and policy actors. The design of the Adaptation Policy Fellowships was changed in the light of experience in phase 3. It proved difficult to get senior policy makers to dedicate more than a few weeks to the fellowship, so the fellowship was made shorter and more intensive and the focus was shifted from learning to adopting and adapting climate research findings into policy.[24]

Options for the future

Option 1: Extend full programme

121. This option would entail an extension of the full CIRCLE programme. The same range of activities would be supported. The project would be focused on the existing institutions that are in CIRCLE and extend the project to incorporate 3 more cohorts of CVFs. The support for the ISP would be at a similar intensity as now and consist of champions workshops and consultancy support.

122. The arguments in favour of this approach are that the arrangements are already in place to rapidly implement a new phase. Little or no additional design work would be needed and the existing project management and implementation team could be contracted to continue work. Subject to the approval timetable, there would be partial continuity with the current project, with perhaps the first cohort of new CVFs being recruited to start in September 2018, 9 months after the 3rd cohort of the current phase finish their fellowships.

Option 2: Extend ISP Component

123. Conduct a thorough assessment of the ISP component, reviewing the current methodology and approach and giving recommendations for improvements. This should be undertaken in the first few months of programme extension.

124. This assessment should also recommend baseline targets for the Action Plans, indicators and targets for monitoring, as well as a new approach and methodology for the extended ISP component to meet outcome targets

125. The funding for the extended ISP component should focus on capacity building in Home Institutions, including the way to incentivise the Home Institutions so that this is prioritised.

126. One way to do this could be to create a challenge fund to support institutional strengthening for which Home Institutions could apply with an approach and

[24] See: http://bit.ly/ACCFP_Policy_Fellows

methodology in line with the programme outcome. A review panel could be set up to evaluate each proposal and determine whether it is eligible for funding . Factors for approval could be based on areas such as: alignment with CIRCLE objectives, asustainability plan, appropriate targets and monitoring processes..

127. Some technical assistance could be brought in to help Home Institutions think through and implement their Action Plans.

128. Our recommendation would be to have a 6-month 'design and build' period, where a thorough assessment can take place and the challenge fund can be designed. Calls for proposals could be launched at the end of this period, with funding allocated by the end of year 1. The fund could run for two further years, with the option to extend the funding for the Home Institutions that were selected in year 1 and year 2 in each funding window, provided they meet the targets agreed.

129. The advantages of extending the ISP component is that the priority of the programme is shifted to make sure that the ISP component is delivering on its outputs and outcome. Whilst it is likely to be harder to design, it is likely to have the biggest impact because there is likely to be substantial improvements from the previous ISP component.

Option 3: Expand

130. Develop the project using the same model as CIRCLE and bring in new institutions and provide additional CVF places for institutions that are already in the project.

131. This option would build on option 1 and increase the number of institutions. CVFs would be drawn from the existing institutions and from new entrants. Creative networking opportunities could be pursued, with home and host institutions from the current phase of CIRCLE providing support to the new entrants, particularly in the development of ISP Action Plans.

132. The arguments in favour of this option are that it builds on the existing project and is relatively simple to start. A phased approach could see a new cohort of CVFs selected from the existing institutions and a new set of home institutions identified, from which some of the candidates for the 2nd cohort of CVFs could be recruited. It also provides some opportunities for the existing home and host institutions to provide support to the new entrant organisations. This could help develop and embed collaborative relationships between research institutions.

Option 4: Evolve

133. Using option 1 or 2 as the foundation, this option would include the establishment of a fund or financing mechanism to support interdisciplinary climate research by the CVFs and their home institutions. This could include a performance-based element, e.g. when institutions have achieved targets in their ISPs, they become eligible to apply for funding from the research fund. Additionally, they could apply for funding to support the implementation of the ISP.

134. In addition to providing more substantial support for the implementation of the ISP, this option could also include support for building the capacity of key institutions, for example supporting the AAS to develop as a regional think tank.

Overview of Options

135. An assessment of the advantages and disadvantages of these options is set out below in Table 8.

Table 8: Options for future support

Option	Advantages	Disadvantages
1. Extend existing project, working with existing group of institutions. Have another 3-year cycle of CVFs with similar level of inputs on institutional strengthening.	Simplicity. Uses an established approach that has been shown to work. No need to establish new relationships. Start-up would be easy with no need for an inception phase. Would not exclude graduating to option 2 and then 3 in due course.	Misses the opportunity to reinforce the institutional strengthening component of the project. ISP inputs would remain at same level as now, whereas there is a need to strengthen this component.
2. Extend the existing programme ISP component. Set up a challenge fund for a 3-year period	Allows for thorough diagnosis of ISP component Focus is on ISP to be able to reach its outcome targets Funding will target the area most in need of strengthening	More complex to set up Misses the opportunity to reinforce the fellowship component, which is working very well
3. Expand existing project to incorporate new institutions, including further 3-year cycle of CVFs in existing institutions.	Relatively simple, builds on existing CIRCLE model. Provides opportunity to Responds to apparent unmet demand from other institutions who wish to be involved in CIRCLE.	Risks associated with expansion. Quality of partner institutions may be lower than existing institutions and ISP component may be less effective.
4. A blend of option 1 or 2, with additional components to support institutional strengthening, funding for collaborative research projects, research outreach and establishment of a think tank on climate change in Africa.	Reinforces institutional strengthening project with practical support to implement ISP. Provides opportunity for CVFs to do further research and strengthen their links with policy makers. Complexity could be mitigated by a phased approach. A 5-year (rather than 3-year) project would enable the first phase to focus on extending or expanding the model and developing the more substantial ISP component with partner institutions. Phase 2 would see its implementation	Most complex option. Performance-based funding for research would have to be combined with some commitment to medium-term core funding, which may exceed the resources DFID has available.

Other recommendations to consider alongside the options

Performance based funding

136. Performance funding of research has been used by DFID to fund non-CGIAR agricultural research centres. A recent evaluation concluded that it had contributed to improving performance. However, the relationship between the funding reward and performance is complex and it is hard to distinguish the effect of more reliable multiyear core funding from the performance element. Reliable multi-year core funding is usually an important element of a funding relationship that includes a performance tranche. Furthermore, ensuring performance-based funding achieves its objectives depends on having agreed unambiguous indicators and targets that are developed collaboratively with the partner institution.[25]

137. Performance-based funding involved setting performance standards and benchmarks related to the effective management of research and the delivery of agreed research outputs. Achieving performance benchmarks in effective management of research, along with producing research outputs would trigger the release of additional core funding.

138. The areas in which project partners had to achieve performance benchmarks included:

i) Robust financial systems;

ii) Planning and implementing gender mainstreaming across the Centre (including HR policy and measures to achieve gender balance in organisational structures and research processes and generation of gender analytical outputs);

iii) An environmental management system with targets for reducing carbon footprint, metrics on energy use;

iv) Research uptake and outreach strategies;

v) Monitoring systems.

139. In addition to these generic indicators of good research management, each centre had outputs related to their area of research. These included targets such as the development, extension and roll out of agricultural technology, the establishment of databases and the publication of research results in peer-reviewed journals.

140. There are several approaches to establishing a performance-based funding mechanism. The following factors need to be considered in its design.

Reliability and predictability

141. Most performance management systems combine a guaranteed stream of multi-year "core" funding or funding that is not tied to activities with a variable amount of funding that is linked to performance – a performance tranche. It is important to strike the right balance between predictable funding and additional funding that is based on performance. Organisations that have too large of a share of their funding being performance-based can face difficulties in planning and management, if there is insufficient guaranteed core funding. This can be mitigated by increasing the interval

[25] Landell Mills 2016: 'Evaluation of DFID's Performance Management Funding of International Agriculture Research Centres' available at http://bit.ly/corefundAg.

between performance tranches. For example, by running the performance assessment on a 2 or 3-year cycle, rather than an annual cycle. The performance bonuses awarded by donors to research institutions vary, from as low as 5% to as high as 25% of funding. In addition, a graduated performance tranche rather than an "all or nothing" performance award can reduce some of the unpredictability.

Reward or recognise?

142. The reasons for the implementation of performance-based funding systems include: i) providing incentives for improving research management and research output, and; ii) the concentration of resources in the best performing organisations. The long-term aim of performance-based funding is to ensure that VfM is achieved through ensuring that funding for research is increasingly provided to organisations that will make the best use of it. The underlying theory of change is that the promise of additional funding – or the possibility of funding being reduced – provides incentives for research organisations to improve their performance. In addition, the provision of a performance tranche enables an institution to add value to their existing project of research by, for example, taking on more dissemination work, or activities to promote research uptake and the incorporation of research findings into public policy.

Grants for implementing the ISP

143. Most CIRCLE partners have developed ISP Action Plans and some have begun implementing them. Some institutions have made good progress, but others have said they need further support to help implement the ISP Action Plans and a further phase (as set out under Option 2 above) could include support for this. This support could include funding to set up activities, support institutional consultation and training to shape and monitor the ISP implementation plan.

144. Funding could be awarded on a competitive basis. Proposals would set out the expected impact on the institution and how they align with the objectives of CIRCLE. The proposal would also need to include a sustainability plan setting out how the activity would be sustained beyond the funding from CIRCLE.

145. Some institutions have expressed interest in embedding the Researcher Development Framework (RDF) into their institutional practice as well as developing more systematic approaches to the management and support of early career researchers. Other areas that could be supported to include developing induction projects, training courses, and a package of associated support activities for early career researchers.

146. In addition to funding activities this component could continue to provide consultancy support to the institutions combined with establishing sharing and learning workshops to help the dissemination of the ideas between the institutions involved in CIRCLE.

Support for collaborative multi-disciplinary research

147. Some of the champions and leaders of the ISP process pointed out obstacles to cultivating and supporting multi-disciplinary collaboration on climate research. There have been some notable achievements – e.g. the establishment in Ghana of the Centre for Climate Change and Gender Studies in the University of Energy and Natural Resources. There is scope to support similar developments elsewhere in the CIRCLE network.

Building networks of research communities

148. A further component of option 3 could be to develop the network of CIRCLE institutions and researchers. This would extend beyond the original universities to form a national or regional network to support researchers.

149. Beyond collaboration and lesson learning on institutional strengthening, this component could promote inter-regional and inter-disciplinary collaboration on research. The networks would also act as a conduit for sharing information on the latest international research, conference and funding opportunities. These communities would bring together both the early career researchers and senior representatives within the institutions, engendering and maintaining important mentoring as well as collaborative opportunities.

Support the establishment of a think-tank on climate change policy and research in SSA

150. The mandate of the AAS includes acting as a scientific think tank for Africa and providing advisory services to regional and national bodies. AAS has made this area of work a priority for future capacity strengthening.

151. A further phase of CIRCLE could support AAS to develop its capacity as a Think-Tank on climate change in Africa. It could draw on the expertise of the CVFs, their mentors, supervisors and AAS fellows to provide policy research and advice to regional, national and local policy-makers. The aim would be to mobilise expertise in the field and ensure that research conclusions reach the right audience and inform debates on adaptation and mitigation strategies across SSA. It would build on AAS's existing relationships with regional bodies such as New Partnership for Africa's Development (NEPAD) and the African Union to set the agenda and identify priority advocacy areas.

152. This component could include support for short-term secondments of researchers to policy-making bodies; commissioning new research and research synthesis products to inform policy development and to develop advice on particular policy areas. This could include facilitating short-term consultancy assignments by the CIRCLE network culminating in research projects. These research projects could then provide opportunities for new CVFs.

153. The CIRCLE project has developed a substantial body of research and the participating institutions have made some – although so far limited – steps in developing their capacity to support early career researchers within their institutions. However, there is a case for further developing the CIRCLE model not only to reinforce and embed the achievements that have already been made but also to scale-up the model to achieve wider and deeper influence.

Comparison with similar programmes

154. This review has tried to locate and compare programmes that are similar to CIRCLE, which include a CVF element. The only programme the review team considered to be close enough to CIRCLE to give comparison is the ACCFP programme. A short diagnosis of this programme and comparison was conducted as part of this review.

155. A future review may want to consider a deeper comparison of the CIRCLE and ACCFP programme, considering more closely the costs, methods and impacts in comparison to CIRCLE.

156. Furthermore, DFID may also want to consider comparing CIRCLE, especially the ISP component, to other capacity building programmes of institutions (preferably climate change institutions in developing countries) to cross-reference where other programmes have been successful in their value for money, methods and potential impacts.

Non-CIRCLE Funding

157. A full assessment of the availability of non-CIRCLE funding for climate change research and the access to it by CVFs has not been undertaken due to the limitations on the scope and budget for this review. However, there are signs that CVFs are managing to secure research funding following their fellowships.

158. DFID may wish to undertake a scoping exercise before any future funding of CIRCLE is applied for to cross-reference where it is possible for CVFs to access climate change and research funding. This exercise should consider for example: the amount and accessibility of funding, the regularity of applications, the success rate of funding, the time period of funding covered and the type of research covered.

159. One of the components of any future funding for CIRCLE could look at helping CVFs to access this funding, including quality assuring any proposals for funding to non-CIRCLE entities.

160. This will eventually reduce the dependency on CIRCLE funds, with the long-term goal of making the programme self-sustaining.

Annexes

Annex 1: Publications in Peer Reviewed Journals by CVFs in cohorts 1 and 2

	Name	Title	Journal/Publisher
1.	Celestine Azubuike Afiukwa with Julius Olaoye Faluyi, Christopher John Atkinson, Benjamin Ewa Ubi, David Okechukwu Igwe, and Richard Olutayo Akinwale.	*Screening of some rice varieties and landraces cultivated in Nigeria for drought tolerance based on phenotypic traits and their association with SSR polymorphism*. **Abstract:** Breeding for drought tolerance based on direct selection for high grain yield under drought has been hindered by the complex nature of drought tolerance mechanisms and the approaches used. Molecular marker-based approaches are a promising alternative. In this study, 30 rice (*Oryza sativa* L.) accessions cultivated in Nigeria were screened in a greenhouse for drought tolerance based on morpho-physiological traits and assessed for DNA polymorphisms using SSR markers for possible marker-trait associations. Our results showed that five Nigerian rice landraces (IJS-02, IJS-09, IK-PS, IK-FS and Lad-f) and three improved varieties (FARO-44, IR-119 and IWA-8) were highly drought tolerant. Sixteen of 20 markers tested yielded amplified products and generated 221 alleles (4 to 5 alleles per marker) with PIC values ranging from 0.24 to 0.95 per marker. Although, none of the markers were present in all the accessions that were found to be highly drought tolerant with respect to any particular morph-physiological trait, some of the markers (RM252, RM331, RM432, RM36, RM525, RM260 and RM318) amplified alleles unique to nearly all the tolerant Nigerian landraces (IJS-02, IJS-09, IK-PS, IK-FS) and FARO-11, a drought tolerant control. These markers may be usefully exploited for molecular breeding of rice for drought tolerance.	African Journal of Agricultural Research **Subject areas**: climate change, rice, drought stress, drought tolerance, SSR markers, molecular breeding. SJR; 0.226, Q3 Available at: http://bit.ly/2rTISCH

	Name	Title	Journal/Publisher
2.	Catherine Abiola Oluwatoyin Akinbami	*Towards sustainable adaptation to climate change: The role of indigenous knowledge in Nigeria and Ghana.* **Abstract**: This study assessed the various sustainable indigenous adaptation strategies being utilised in the respective countries to combat the adverse effects of climate variability and change; and also, examined how sustainable the adaptation strategies were. The study employed the use of quantitative and qualitative methods to elicit information from the respondents from Ghana and Nigeria. The results indicate that there are major international differences but that adaptation strategies taken among indigenous people in the respective countries are similar. Indigenous people are resorting to soil-water conservation, identification of resistant crops to prevailing climate, use of appropriate techniques and chemicals for improving soil fertility, improvised harvesting techniques, and strategic planting periods for their crops. In most cases also, local people also embark on alternative livelihood options to support income levels of their households. The authors strongly recommend extension services and introduction of scientific technologies to complement indigenous knowledge approaches.	African Journal of Sustainable Development **Subject areas**. sustainable practices, adaptation strategies, indigenous knowledge, climate change
3.	Bartholomew Ituma Aleke.	*Information and communication technology and climate change adaptation: Evidence from selected mining companies in South Africa. Jàmbá:* **Abstract:** This article presents the adoption of ICT innovation as part of the adaptation strategies towards reducing the mining sector's vulnerability and exposure to climate change disaster risks. Findings from the study reflect how ICT intervention orchestrated changes in communication patterns which are tailored towards the reduction in climate change vulnerability and exposure. The research concludes with a proposition that ICT intervention must be part of the bigger and ongoing climate change adaptation agenda in the mining sector.	Journal of Disaster Risk Studies SJR: 0.238, Q3 **Subject area:** ICT; climate change; disaster risk reduction; mining; adaptation; South Africa

	Name	Title	Journal/Publisher
4.	Antwi Agyei	*Perceived stressors of climate vulnerability across scales in the Savannah zone of Ghana: a participatory approach* **Abstract**: This study addresses the particular research gap on the effects of non climatic stressors by adopting a multi-scale approach to understand how climatic and non-climatic stressors vary, and interact, across three spatial scales (household, community and district levels) to influence livelihood vulnerability of smallholder farming households in the Savannah zone of northern Ghana. Results show that climatic and non-climatic stressors were perceived differently; yet, there were a number of common stressors including lack of money, high cost of farm inputs, erratic rainfall, cattle destruction of crops, limited access to markets and lack of agricultural equipment that crossed all scales. Results indicate that the gender of respondents influenced the perception and severity assessment of stressors on rural livelihoods at the community level. Findings suggest a mismatch between local and district level priorities that have implications for policy and development of agricultural and related livelihoods in rural communities. Ghana's climate change adaptation policies need to take a more holistic approach that integrates both climatic and non-climatic factors to ensure policy coherence between national climate adaptation plans and District development plans.	Regional Environmental Change SJR: 0.97, Q2 **Subject areas**: Livelihoods, climate variability, Food security.

	Name	Title	Journal/Publisher
5.	Divine Odame Appiah with CAO Akinbami, C Ifeanyi-Obi and AT Kabo-Bah	*Towards sustainable adaptation to climate change: The role of indigenous knowledge in Nigeria and Ghana* **Abstract:** Climate change has been identified as a threat to poverty reduction and economic growth, and it may erode many of the development gains made in recent decades. From the short to the long term, climate change and variability threaten human and social development by altering customary means of livelihood and restricting the fulfilment of human potential. In all these, indigenous people are the most affected, considering their high vulnerability level. In view of this, such people find it difficult to adapt to climate variability and change as well as other environmental changes. Not only is the viability of indigenous livelihoods threatened, due to food insecurity, lack of potable water and poor health, but also the cultural integrity is also undermined. This study assessed the various sustainable indigenous adaptation strategies being utilised in the respective countries to combat the adverse effects of climate variability and change; and also examined how sustainable the adaptation strategies were. The study employed the use of quantitative and qualitative methods to elicit information from the respondents from Ghana and Nigeria. The results indicate that there are major international differences but that adaptation strategies taken among indigenous people in the respective countries are similar. Indigenous people are resorting to soil-water conservation, identification of resistant crops to prevailing climate, use of appropriate techniques and chemicals for improving soil fertility, improvised harvesting techniques, and strategic planting periods for their crops. In most cases also, local people also embark on alternative livelihood options to support income levels of their households. The authors strongly recommend extension services and introduction of scientific technologies to complement indigenous knowledge approaches. **Keywords**: sustainable practices, adaptation strategies, indigenous knowledge, climate change	African Journal of Sustainable Development https://www.ajol.info/index.php/ajsd/article/view/144030
6.	Divine Odame Appiah and IO Azeez	*Sustaining rural livelihoods: On-farm climate-smart adaptation measures among smallholder farmers in rural Ghana* **Abstract:** This paper examines the various on-farm adaptation measures among smallholder farmers in the Offinso municipality with the view to drawing lessons for effective policy making and implementation. This paper recommends vigorous direction of extension work by the Department of Food and Agriculture towards harnessing the identified on-farm climate-smart adaptation measures in the study area for sustainable food production.	African Journal of Sustainable Development Available at: http://bit.ly/2rGKHSe **Subject area:** On-farm activities, livelihoods, climate-smart adaptation, Ghana

	Name	Title	Journal/Publisher
7.	Hatim Elamin	*Estimation of Acacia senegal Tree Biomass Using Allometric Equation and Remote Sensing, North Kordofan State, Sudan* **Abstract**: This study was conducted in Um Habila Reserved Forest (2.7 square Kilometres) which is located in El Rahad Locality in North Kordofan State, Sudan.It dealt principally with the estimation of woody biomass of *Acacia senegal* trees by applying allometric equations for ground data combined with satellite data sets. Primary data were obtained by the application of random sampling techniques, counting a total of 27 trees. The tree coordinates and diameters were recorded. Remote sensing data were acquired from SPOT-5 (08.11.2009) earth observation satellite and integrated with the in-situ data. The study findings revealed that the mean diameter of *Acacia senegal* tree was 7.31 cm ± 1.68 cm. The tree above ground biomass (TAGB), tree below ground biomass (TBGB) and total tree biomass (TTB) of *Acacia senegal* were found to be 15.15± 9.01 kg, 3.03 ±1.80 kg, and 18.18±10.81 kg, respectively. Remotely sensed data were integrated with the terrestrial method for creating and correlating the relationship between them, resulting in development of the power model based on spectral reflectance (IR) with adjusted R^2 of 0.504. The application of allometric equations is useful as non-destructive method for local biomass estimations and the application of remote sensing is recommended for biomass estimation in wide coverage areas.	International Journal of Agriculture, Forestry and Fisheries Available at: http://bit.ly/2qVaMcw **Subject area:** Forestry.Remote sensing, Sudan
8.	Zelda Elum and Vuyho Mjimba	*Green economy transition and the sustainability of the Nigerian aquaculture industry: Policy perspectives and the way forward* **Abstract:** Sustainable development and green economy transition call for innovations that address the simultaneous realisation of economic growth, and improved human and environmental well-being. A holistic and appropriate policy and legislative regime is important to ensure the efficacy of these innovations. This research explored how policies and institutions in Nigeria relate to the need and drive for a sustainable aquaculture industry. The findings show that the policies and regulations do not address all aspects that could give rise to such an industry. The paper suggests the need for a holistic policy and institutions audit to determine their suitability for the new growth and development agendas.	Environmental Science and Pollution Research (Springer) SJR: 0.89, Q1 Available at: http://bit.ly/2qNFswP Subject area: Aquaculture, Climate Change, Green Economy transition, Sustainability

	Name	Title	Journal/Publisher
9.	Zelda Elum and K. Mopipi, and A Henri-Ukoha	*Oil exploitation and its socioeconomic effects on the Niger Delta region of Nigeria.* **Abstract:** The oil exploration and exploitation industry which is majorly centred in the Niger Delta region is without doubt currently the most important earner of foreign exchange to the Nigerian economy. The Niger Delta is home to an extraordinary variety of people; mostly fishers and farmers with a history of rich cultural heritage. However, the region is suffering from devastating oil pollution. Although the effects of oil spill depend on factors such as size or area of spill and geographical location, the socioeconomic and environmental costs of oil production can be extensive; these range from destruction of wildlife, biodiversity loss, air and water pollution, degradation of farmland and damage to aquatic ecosystems. The paper reviews the adverse effects of oil exploitation on the Niger Delta region. It researches the common belief that government and oil multinationals are negatively disposed to the socioeconomic and environmental wellbeing of host communities especially in events of oil spillage. The paper reveals that oil exploitation has increased the rate of environmental degradation and has perpetuated food insecurity as a result of death of fish and crops as well as loss of farm lands and viable rivers for fishing activities leading to loss of livelihood. The paper supports the call for multinationals operating in the region to modernise operating infrastructure and equipment in order to prevent avoidable oil spillages that often lead to community restiveness, and more so, intensification of joint efforts between oil multinationals and government in the capital development of the region is very important.	Environmental Science and Pollution Research (Springer) SJR, 0.886, Q1 Available at: http://bit.ly/Elum_Oil_Exploitation
10.	Zelda Elum and Judith Bosede Simonyan	*Analysis of Nigerian insurers' perceptions of climate change* **Abstract**: In recent times, global agricultural productivity has been increasingly affected by climate change. It is believed that societal adoption of insurance as an adaptive response to climate change can have significant implications for insurers. The study investigates empirically insurers' perceptions of climate change and the challenges they face in Nigeria. It examines the proposition that insurance firms in Nigeria are not mindful of the impact of climate change. The study applied the use of descriptive statistics, Kendall's coefficient of concordance and principal component analysis on collected primary data. It was found that insurers in Nigeria were highly aware of climate change and its impact but did not believe it affects their operational costs and payments of claims. Although there is great scope for insurers to increase their client base in the Nigerian market, insurers face challenges of insurance rate-cutting, low patronage and environmental factors. The study concludes that there is a need for insurance regulators to enforce a level playing field for all firms. It also advocates for public support of private insurers to enhance insurance coverage for agriculture, the largest employer of labour in the country.	South African Journal of Economic and Management Sciences SJR Q3, 0.162 Available at: http://bit.ly/Nigeria_Insurers

	Name	Title	Journal/Publisher
11.	Zelda Elum	*Farmer's perception of climate change and responsive strategies in three selected provinces of South Africa* **Abstract:** The world has responded to climate change phenomenon through two broad response mechanisms (mitigation and adaptation strategies) with the aim of moderating the adverse effects of climate change and/or to exploit any arising beneficial opportunities. The paper aims to examine the trend in climate parameters, farmers' perception of climate change, constraints faced in production and to identify the strategies (if any) that farmers have adopted to cope with the effects of changing climate. A one-way analysis of variance, percentage analysis and Garrett ranking technique were applied to a set of primary data collected from 150 randomly sampled farmers with the aid of questionnaires in three purposively selected provinces through the months of June to August 2015. The analytical results of obtained recent weather data revealed that the climate parameters have significantly changed over time and these were substantiated by farmers' experiences. The farmers are engaging in various climate-response strategies, among which, the planting of drought-tolerant varieties is most common. Therefore, it is important to enhance farmers' access to improved drought-tolerant seeds and efficient irrigation systems. Also observed, is that the lack of awareness of insurance products and inability to afford insurance premiums were the principal reasons majority of the farmers did not have insurance. These present a need to strengthen insurance adoption among farmers through various supporting programmes that may include premium subsidies and media outreach. The paper under one platform provides evidence of changing climate, farmers' responses towards mitigating perceived adverse effects of the changed climate, and South Africa's national policy on adaptation and mitigation. Keywords: Perception; Climate change; Vulnerability; Mitigation; Adaptation; Farmers; South Africa	Climate Risk Management Volume 16, 2017, Pages 246–257 (Elsevier) SJR: Q1 Available at: http://bit.ly/Elum-Farmer_Perception

	Name	Title	Journal/Publisher
12.	Zelda Elum, D.M. Modise, G. Nhamo	*Climate change mitigation: the potential of agriculture as a renewable energy source in Nigeria* **Abstract:** Energy is pivotal to the economic development of every nation. However, its production and utilization leads to undesirable carbon emissions that aggravate global warming which results in climate change. The agriculture sector is a significant user of energy. However, it has the potential to be a major contributor to Nigeria's energy supply mix in meeting its energy deficit. More so, in the light of current and impending adverse effects of climate change, there is a need to contain GHG's emissions. This paper focuses on bioenergy utilization as a climate change mitigation strategy and one that can, through effective waste management, enhance sustainable economic development in Nigeria. The paper employed a critical discourse analysis to examine the potential of the agricultural sector to provide biofuels from energy crops and other biomass sources. We conclude that Nigeria can reduce its GHG emissions and greatly contribute to global climate change mitigation while also alleviating its energy supply deficit if the agricultural and municipal wastes readily available in its towns and cities are converted to bioenergy. Such engagements will not only promote a clean and healthy environment but also create jobs for economic empowerment and a better standard of living for the people. Keywords: Agriculture Bioenergy Climate change Mitigation Nigeria Renewable energy	Environmental Science and Pollution Research (Springer) February 2017, Volume 24, Issue 4, pp 3260–3273 SJR: Q1 Published December 2016 Available at: http://bit.ly/Elum_Z_Climate_Change_Mitigation
13.	Amos Tiereyangn Kabo-Bah	*Multiyear Rainfall and Temperature Trends in the Volta River Basin and their Potential Impact on Hydropower Generation in Ghana* **Abstract:** The effects of temperature and rainfall changes on hydropower generation in Ghana from 1960–2011 were examined to understand country-wide trends of climate variability. Moreover, the discharge and the water level trends for the Akosombo reservoir from 1965–2014 were examined using the Mann-Kendall test statistic to assess localised changes. The annual temperature trend was positive while rainfall showed both negative and positive trends in different parts of the country. However, these trends were not statistically significant in the study regions in 1960 to 2011. Rainfall was not evenly distributed throughout the years, with the highest rainfall recorded between 1960 and 1970 and the lowest rainfalls between 2000 and 2011. The Mann-Kendall test shows an upward trend for the discharge of the Akosombo reservoir and a downward trend for the water level. However, the discharge irregularities of the reservoir do not necessarily affect the energy generated from the Akosombo plant, but rather the regular low flow of water into the reservoir affected power generation. This is the major concern for the operations of the Akosombo hydropower plant for energy generation in Ghana.	Climate, 2016, 4(4), 49 http://www.mdpi.com/2225-1154/4/4/49/pdf Not known, but other MDPI online publications score in Q1 and Q2 Subject areas: Temperature, Hydropower generation, Volta River

	Name	Title	Journal/Publisher
14.	Hannah Karuri *with* Daniel Olago, Roy Neilson, Editah Njeri, Alfred Opere, Paul Ndegwa	*Plant parasitic nematode assemblages associated with sweet potato in Kenya and their relationship with environmental variables* **Abstract**: Sweet potato is one of the most important staple food crops consumed in Kenya and throughout Africa but yields are greatly reduced by plant parasitic nematodes (PPN). The aim of this study was to determine the prevalence of PPN in Kenyan sweet potato fields and their relationship with soil and climatic variables. Soil samples were collected from sweet potato fields in Busia, Teso, Kisii, Embu and Makueni counties. Thirteen nematode genera were identified across the five counties with *Meloidogyne*, *Pratylenchus* and *Rotylenchus* being the most prevalent. There was a significant (P <0.05) relationship between PPN abundance and sodium, calcium and iron. Canonical correspondence analysis of climatic variables revealed that the relationship between rainfall and nematode genera was significant (P <0.05) while maximum and minimum temperatures were not significant. This description of PPN assemblages associated with sweet potato in Kenya and their relationship with environmental variables provides a starting point from which appropriate nematode management strategies can be implemented.	Tropical Plant Pathology- Springer SJR: Q2 **Subject areas**: Soil properties, Crops; Food security Available at: http://bit.ly/Karuri_Plant_Nematodes

	Name	Title	Journal/Publisher
15.	Hannah Karuri	*A survey of root knot nematodes and resistance to Meloiogyne incognita in sweet potato varieties from Kenyan fields* **Abstract:** The root knot nematode, *Meloidogyne* is one of the most economically damaging plant parasitic nematode groups, and are widely distributed in Kenyan agro-ecosystems. The aim of this study was to determine the diversity of *Meloidogyne* species in Kenyan sweet potato fields and identify sweet potato varieties that exhibit resistance to *M*. *incognita*. *Meloidogyne* species were collected from Nyanza, Western, Eastern and Central Provinces of Kenya. Mitochondrial DNA was used to differentiate *Meloidogyne* species. The most common species in all sampled regions was *M*. *incognita*. *Meloidogyne hapla*was recorded for the first time in Kenyan sweet potato growing areas (Mosocho, Matayos, Teso South, Manyatta, and Nzaui sub-counties), while *M*. *enterolobii* was observed in Kiharu, Matayos and Mosocho sub-counties and a novel *Meloidogyne* sp. was identified in Kiharu sub-county. Seventy-two sweet potato varieties collected from both agricultural fields and research stations in Kenya were evaluated for resistance to *M*. *incognita* under greenhouse conditions in two separate trials. Known susceptible (Beauregard) and resistant (Tanzania) sweet potato varieties were included as controls. Responses of sweet potato varieties to *M*. *incognita* infection was assessed by the number of eggs present and level of galling on a scale of 1–5, where 0 = 0 galls and 5 ≥ 100 galls. The reproduction index (RI) was used to classify the varieties as resistant or susceptible. There was a significant difference ($P < 0.001$) in the number of eggs, GI and RI among the varieties tested. Forty nine sweet potato varieties were considered very resistant and may be used in breeding programs to incorporate resistance against *M*. *incognita* into commercial cultivars of sweet potato or to use them in crop rotation programmes for management of RKN. The results on *Meloidogyne* species diversity in Kenyan sweet potato fields will also be useful in nematode management programs.	Crop protection, Elsevier SJR: Q1 H.Index: 70 **Subject area**: Diversity; *Ipomoea batatas*; *Meloidogyne incognita* http://bit.ly/Karuri_Nematodes
16.	Lucy Kassian	*Implication of climate change and variability on stream flow in Iringa region, Tanzania* **Abstract:** This paper investigates the implication of climate change and variability on the river flow within the traditional irrigation farming system, *vinyungu*, in Iringa region, Tanzania. The study aimed at establishing areas that are most impacted by climate change in terms of river flow and various adaptation strategies. The long-term annual trends of rainfall and river flow were analyzed via Mann–Kendall's statistical test and linear trend analysis. Climate data on rainfall trend showed a significant decreasing pattern during the last 17 years. Also, river flow data showed a slight decline within the same period. Decrement in river flow, combined with rainfall fluctuation, forced farmers to employ various adaptation strategies. Following the severity of the problem the paper recommends that more research be conducted on proper water management for sustainable river flow for both agriculture production and environmental management.	Journal of Water and Climate Change- IWA publishing SJR: 0.36 – Q1 H-Index: 11 **Subject areas**: Climate change and variability; Adaptation, Rainfall. Available at: http://bit.ly/Kassian_climate_change

	Name	Title	Journal/Publisher
17.	Olga Kupika and Godwell Nhamo	*Mainstreaming biodiversity and wildlife management into climate change policy frameworks in selected east and southern African countries;* Abstract: This paper audits climate change policies from selected east and southern African countries to determine the extent to which climate change legislation mainstreams biodiversity and wildlife management. The key finding is that many climate change policy related documents, particularly the National Adaptation Programme of Actions (NAPAs), address threats to biodiversity and wildlife resources. However, international policies like the United Nations Framework Convention on Climate Change and Kyoto Protocol do not address the matter under deliberation. Regional climate change policies such as the East African Community, Common Market for Eastern and Southern Africa and African Union address biodiversity and/or wildlife issues whilst the Southern African Development Community region does not have a stand-alone policy for climate change. Progressive countries like Rwanda, Uganda, Tanzania and Zambia have recently put in place detailed NAPAs which are mainstream responsive strategies intended to address climate change adaptation in the wildlife sector.	Jàmbá: Journal of Disaster Risk Studies SJR: 0.24 H-Index. 3 **Subject area**: Climate change policies; Wildlife management Available at: http://bit.ly/Kupika_Mainstreaming_Biodiversity
18.	Olga Kupika and Edson Gandiwa	*Role of formal an informal institutions in the management of threats in the Middle Zambezi Biosphere Reserve, Zimbabwe* **Abstract:** the Middle Zambezi Biosphere Reserve (MZBR) in northern Zimbabwe, is under threat from athropogenic-induced stressors such as habitat encroachment, land degradation, climate change, deforestation, and illegal harvesting of resources. Stakeholders in the wildlife sector, have a mandate to interpret international policies and adapt them to local conditions, and to inculcate them in local policies and laws. This paper uses evidence from key informant interviews, focus group discussions and documentary analysis to highlight the legal and policy framework for wildlife and forestry management strategies for sustainable utilization of wildlife and forest resources within a semi-arid environment in the MZBR. Results indicate that despite the absence of formal legislation pertaining to biodiversity threats and exclusion from wildlife poicy; formal and informal institutions play a minimal role addressing threats to forests and wildlife resources in the biosphere reserve. There is need to mainstream biodiversity threats particularly illegal harvesting of wildlife resources and climate change into national wildlife policies. Integrated management of wildlife resources in biosphere reserves is critical to mitigation of threats to wildlife resources.	Nature and Faune/ FAO United Nations Vol 30, Issue No 2. Available at: http://bit.ly/Kupika_Biosphere

	Name	Title	Journal/Publisher
19.	Abiodun Suleiman` Momodu, Ahmad Addo, John-Felix Kayode Akinbami and Yacob Mulugetta	*Low-carbon development strategy for the West African electricity system: preliminary assessment using System dynamics approach* **Abstract**: Policy makers seek to understand the trade-offs needed between economic growth and climate change. This provides the context to explore low-carbon development (LCD) pathways for the West African electricity system. **Methods:** The study relied on both primary and secondary sources to elicit required information. These data were elicited from relevant authorities in the West African electricity system, namely, West African Power Pool and ECOWAS Regional Electricity Regulatory Authority. The objectives were to evaluate the planning processes in the West African Power Pool electricity system vis-a-vis low-carbon development strategy (LCDS), develop a System dynamics (SD) model, and assess the relevance of the developed model to examine the nonlinear relationship between generation adequacy and greenhouse gas emission (GHG) reduction. The SD model examined the tension between providing adequate supply capacity against reducing emission from the generation technologies in the West Africa electricity system. This model arranged the complexities in the system and established the basic interconnecting structure to conduct the analysis. High leverage points were identified. **Results:** Four high leverage points were identified: capacity factor (CF), emission factor (EF), time to adjust capacity, and expectation formation. CF and EF improvement increased efficiency in the system. The expectation formation periods were determined at 7.5 years for the base case scenario and 7 years for the low-carbon development option scenario. Time to adjust capacity was located at 21 and 20 years respectively; deduced from the average time, it will take to construct a combined cycle gas power plant (3 years) and an allowance of 2 years for delays and its decommissioning time. Between 2011 and 2012, in LCD option scenario, emission of GHG to the atmosphere dropped as generation did but began a steady rise for the simulation period to a value of 6.154 billion tCO2 in 2060. **Conclusions**: Electricity Planning-Low-Carbon Development (EP-LCD) model—with three modules, was developed for assessing WAPP in low carbon economy. High leverage points identified in the model simulation situate three policy options for overcoming poverty and mitigation targets as regards resource mix, investment cost recovery, and technical factors to reduce system's environmental footprint. Keywords: Low carbon development Electricity system WAPP Feedback loop Leverage points	Energy, Sustainability and Society 2017 7:11 (Springer) H Index: 8 SJR: 0.619, Q2 Available at: http://bit.ly/Momodu_Low_Carbon

	Name	Title	Journal/Publisher
20.	Julius Nwachukwu and CA Shisanya, P Dasgupta, JA Mbanasor	*Socioeconomic Response Patterns of farmers to Climate Change in Africa: Lessons from Southeast Nigeria* **Abstract:** The potential of African agriculture to support livelihoods for millions of people and employment for up to 60% labour has been heavily impeded by the growing threat of climate change. This challenge has left farmers to face the pressure to adjust the agricultural systems under widespread poverty, high population and low productivity resulting in low coping capabilities. Consequently, this study sought to examine to socioeconomic response patterns of farmers to climate change in Southeast Nigeria. Specifically, it assessed the level of awareness of climate change adaptation options among farmers; determined the rate of adoption of climate change adaptation measures and estimated socio-economic factors influencing their choice of the adaptation categories. With multistage sampling technique, 360 farmers were selected from three out of five states that make up the Southeast of Nigeria from whom data and information were elicited using pretested and structured questionnaire. Analysis of data was done using descriptive statistics, adoption formula and probit model. Results show that level of awareness of climate change adaptation measures and their adoption rate was low. The likelihood of adapting reactive options was influenced by predominantly by education, farm size and membership of cooperatives while the probability of choosing the anticipatory or proactive adaptation options was affected by extension contact. The need to sensitize and incentivize has become imperative if climate compatible development which involves food security paradigms is to be achieved.	Nigeria Agricultural Journal http://www.ajol.info/index.php/naj/article/view/125563 Subject areas: Climate Change, Adaptation, Socioeconomics and South Eastern Nigeria
21.	Olawale Olayide	*Differential impacts of rainfall and irrigation on agricultural production in Nigeria: Any lessons for climate-smart agriculture?* **Abstract:** The rain-fed agriculture system is vulnerable to climate change impact. However, such impact may also vary by aggregate and sub-sectoral levels of agricultural production. The impact of climate change and variability on agricultural production would engender appropriate policies and practices towards a sustainable agricultural production system. We investigated the differential impacts of rainfall and irrigation on agricultural production in Nigeria, and drew lessons for climate-smart agriculture (CSA) in Nigeria. Using time series data that spanned 43 years and econometric analytical technique, we quantified the differential impacts of rainfall and irrigation on aggregate production and sub-sectors (all crops, staples, livestock, fisheries and forestry). Irrigation had positive and significant impact on aggregate agricultural production as well as all sub-sectors of agriculture. These findings suggest the need for the minimization of the impact of climate-induced production risks through CSA which would involve complementary development of more arable land areas under irrigation in Nigeria. Irrigation would also enhance complementary agricultural water management for the development of all the sub-sectors of agriculture, thereby enhancing food security and sustainable agricultural production under prevailing climate change and variability.	Agricultural Water Management (Elsevier), Volume 178, December 2016, Pages 30–36 SJR: 1.55 H-Index: 79 Available at: http://bit.ly/2sEnUUj **Subject area**: Agricultural production; Rainfall; Irrigation; Climate-smart agriculture; Impacts

	Name	Title	Journal/Publisher
22.	Olawale Olayide	*Trends and Policy Correlates of Agricultural Production and Agricultural Production Sustainability Outcomes in Ghana and Nigeria* **Abstract:** This paper analysed policy correlates of agricultural production and agricultural production sustainability outcomes in Ghana and Nigeria. It underscores the influence of political systems and international development agendas as correlates of agricultural production and agricultural production sustainability outcomes. This is to the extent of providing evidence policy on agricultural production and agricultural production sustainability outcomes. Ghana and Nigeria have comparable farming/agricultural system and policy environment. Data used for the analyses spanned five decades. Trends analysis and inferential statistics were employed. The results revealed that policy correlates can contribute to the current discourse in sustainable development agenda and to resolving the dilemma of agricultural policy implementation for sustainable agricultural development, especially in Ghana and Nigeria. The findings reinforce the need for appropriate policies in transforming the agricultural sector while ensuring sustainable development outcomes.	Journal of Sustainable Development SJR: Q4 H Index: 2 http://bit.ly/2rTH8cu **Subject area**: Agriculture; Political systems; Policy implementation
23.	Olawale Olayide	*Review and analysis of vulnerability to rainfall variability and policy responses to agricultural water supply in Nigeria* **Abstract:** This paper reviewed and analysed vulnerability to climate change-induced rainfall variability and policy responses to agricultural water supply in Nigeria. The review provides evidence for policy feedbacks as well as priority setting for the post-2015 sustainable development agenda. Nigeria's vulnerability to climate change variability is due to a number of factors: its geographical characteristics, limited capacity to adapt, dependence on climate-sensitive resources, teeming population, and concentration of Gross Domestic Product (GDP) generating industries in locations that are highly vulnerable to climate change. The poverty level in the country could further worsen climate change adaptation and mitigation strategies. The policy responses were identified and categorized either as climate change sensitive or climate change specific.	Journal of Food, Agriculture and the Environment Available at: http://bit.ly/2s7dbVV **Subject area**: Climate Change; Rainfall, Vulnerability, Policy responses, Nigeria.

	Name	Title	Journal/Publisher
24.	Olanrewaju Olusoji Olujumi and G. R. E. E. Ana, O. O. Ogunseye and V. T. Fabunmi	*Air quality index from charcoal production sites, carboxyhaemoglobin and lung function among occupationally exposed charcoal workers in South Western Nigeria* **Abstract:** Charcoal production is often accompanied with gaseous and particulate emission into the atmosphere and occupationally exposed workers could be affected. This cross sectional comparative study was carried out to assess the levels of carbon monoxide (CO), carbon dioxide (CO_2), sulphur dioxide (SO_2), nitrogen dioxide (NO_2) and particulate matter ($PM_{2.5}$) generated during the phases of charcoal production and their relationship with certain biomarkers among charcoal workers (subjects) and non-charcoal workers (controls) such as carboxyhaemoglobin (COHb), forced expiratory volume in the first second of expiration (FEV_1), peak expiratory flow rate (PEFR) and body mass index (BMI) in Igbo-Ora, Oyo State and Alabata, Ogun State, which are two of the major hubs of charcoal production in South Western Nigeria. Four communities in Igbo-Ora and six communities in Alabata were purposively selected and levels of pollutant gases were assessed using appropriate gas meters, $PM_{2.5}$ was assessed with Thermo Scientific MIE pDR-1500, FEV_1 and PEFR were measured with Piko-1 spirometer while COHb was assessed using non-invasive pulse CO-oximeter (Rad 57). Data were statistically analyzed and results were compared with recommended guidelines. The mean FEV_1, PEFR, COHb and BMI for subjects and controls were 2.35 ± 0.73 and 2.69 ± 0.56, 253.72 ± 103.45 and 330.02 ± 94.61 ($p < 0.01$), 13.28 ± 3.91 and 8.50 ± 3.68 ($p < 0.01$) and 21.97 ± 2.19 and 23.36 ± 3.74 ($p < 0.05$) respectively. There was a statistically significant difference between actual and expected values of FEV_1 ($p < 0.01$) and PEFR ($p < 0.01$) among charcoal workers. There existed a positive correlation between CO and COHb while FEV_1 and PEFR correlated negatively with $PM_{2.5}$. The study showed that charcoal workers are exposed to high levels of CO and $PM_{2.5}$, contributing to lowered respiratory functions for FEV_1 and PEFR and high levels of COHb compared to the control group. Routine respiratory and carboxyhaemoglobin assessment of persons involved in charcoal production is also recommended.	Biomed Central (Springer Plus) 2016; 5(1): 1546. Available at: http://bit.ly/2qQ1u6l H index 13 SJR Q1, 0.394 **Subject areas:** Gases emission, Air quality index, Lung function, Carboxyhaemoglobin, Charcoal production, Nigeria

	Name	Title	Journal/Publisher
25.	Iyabo Olunike Omomowo, A. O. Salami, and T.I. Olabiyi	*Preliminary study on climate seasonal and spatial variations on the abundance and diversity of fungi species in natural plantation ecosystems of Ile-Ife, South West, Nigeria* **Abstract**: The biodiversity assessment of fungi and the knowledge of the forces that controls the distribution of fungi and their community are becoming more important in the light of climate change and variability. Fungi provide the global foundation for plant as mutualists, decomposers and pathogens. This study deals with the primary screening, characterization and seasonal variations of mycoflora, isolated from medicinal, oil palm and plantain plantations of the Obafemi Awolowo University, Ile-Ife, Nigeria, from February to June. Fungi colonies and different fungal species were screened and identified across different months and weather variability. Data on the weather variations were collected. Soil samples (0 to 30 cm depth) were collected at different locations within the rhizosphere in each plantation, and the physico-chemical properties and fungi microbial load were determined using standard techniques. The result of soil physico-chemical properties showed that the soil type was humus and acidic in nature. A total of 8 fungi genera and 33 species were recorded in the studied plantations. Temperature of the studied areas ranged between 22.5 to 31.06°C, while the relative humidity of the studied sites ranged from 54.6 to 100%. The rainfall data obtained in this study ranged between 0.381 to 0.584 m. The highest microbial load was (8 × 105 CFU/g) and was observed under medicinal plantation in the month of June. The results obtained showed that weather variability's have direct effect on different fungal species sporulation and CFU formation.	African Journal of Environmental Science and Technology Available at: http://bit.ly/2st1oi0 **Subject area:** Climate, fungi, soil, microbial load, natural plantation.

	Name	Title	Journal/Publisher
26.	Funmilayo Grace Oni	*An assessment of climate change impacts on maize (Zea mays) yield in South-western Nigeria Africa*. **Abstract:** Maize is the most important cereal crop in sub-Saharan Africa (SSA) and an important staple food in Nigeria. Africa produces 6.5% of Maize worldwide. Nigeria with nearly 8 million tons of Maize, emerged the largest producer in However, most maize production in Africa is rainfed. Given the current trends in climate change and its uncertain specific effects on the crop yields in general and that of Maize in particular, formulating practical, affordable and acceptable response strategies for Maize production in Nigeria required a study that evaluates the impacts of climate change on Maize under varying conditions. Data on Maize yield in South western Nigeria, for eleven years (1999-2009) were obtained from the Agricultural Production survey of the Federal Ministry of agriculture and Rural Development, Nigeria. A corresponding climatic data (minimum and maximum temperature, solar radiation and rainfall) for the period were obtained from the Nigeria Meteorological gency (NIMET) , Oshodi, Nigeria. The data sets were smoothened and adjusted for appropriate statistical analysis to generate model that could be adopted for seasonal planning and future yield optimization of Zea mays in the region. A linear regression model expressed as Yield = 55.503SRAD + 2.054Tmax 4- 29 501Tmin - 0.052RAIN 1459.373was generated where SRAD = Solar Radiation, Tmax = Maximum Temperature, Tmin = Minimum Temperature and RAIN = rainfall. The performance of the model was evaluated using the normalized root mean square error otherwise called percentage error(PE) as being capable of serving as yardstick for future assessment of climate change impact on Maize yield in South Western Nigeria.	International Journal of Applied and Natural Sciences (IJANS) Vol. 5, Issue 3, Apr - May 2016; 109-114 Available at: http://bit.ly/2rGIoP5 **Subject area:** Zea Mays, Climate Change, Yield Optimization, South-Western Nigeria
27.	Naomi Saronga, Idda Hubert Mosha, Anna Tengia Kessy, Mangi Job Ezekiel, Alex Zizinga, Opportuna Kweka, Paul Onyango and Sari Kovats	*I eat two meals per day' impact of climate variability on eating habits among households in Rufiji district, Tanzania: a qualitative study* **Abstract**: Improved understanding of the influence of climate variability on eating habits is required to manage health outcomes that could be produced. Agriculture production is the main source of income to people in Rufiji district, where communities produce food for household and also for income. Effects of climate variability and weather extremes include occurrence of floods and prolonged dry seasons, which are recently reported to be very frequent in Africa continent, affecting food production. Prolonged dry seasons as well as frequent floods have been reported to destroy cultivated food crops in Rufiji district. However, there is little evidence on climate variability effects on household food security and their eating habits in Tanzania. Therefore, this study assessed the influence of climate variability impacts such as prolonged dry seasons and floods on the eating habits of Tanzanian rural households..	Agriculture and Food Security Available at: http://bit.ly/2s6A5wU Subject Area: Climate variability Eating habits Rural households Floods Drought

	Name	Title	Journal/Publisher
28.	Amon Taruvinga, M. Visser, and L. Zhou	*Determinants of Rural Farmers' Adoption of Climate Change Adaptation Strategies: Evidence from the Amathole District Municipality, Eastern Cape Province, South Africa* **Abstract**: There is consensus that rural farmers' livelihoods are vulnerable to climate change. Also, literature suggests that locally driven adaptations are critical complementary strategies that can be targeted to reduce the negative effects of climate change in the short-run. Thus far, through using a cross sectional survey sample of 200 rural farmers from the Amathole district municipality of the Eastern Cape Province of South Africa, the paper estimated farmers' climate change adaptation strategies, adaptation portfolio diversity and factors that condition farmers' adoption behavior. The results reveal several crop, livestock and non-farm based adaptation strategies skewed in favour of crop and non-farm floral based techniques. The results further indicate that rural farmers in general are low adopters of climate change adaptation strategies with poor adaptation portfolio diversity. Regression estimates reveal several socio-economic and institutional factors as drivers of adoption and adaptation portfolio diversity worth targeting to promote the ability of rural farmers to cope with climate change.	International Journal of Environmental Science and Development, Vol. 7, No. 9, September 2016 Available at: http://bit.ly/2rzkLG4 **Subject area**: Rural farming ; Adaptation strategies
29.	Alex Zizinga	*Potential Climate Change Adaptation and Coping Practices for Agricultural Productivity in the Mountain Areas of South Western Uganda.* **Abstract**: Agricultural productivity in Rwenzori mountain area is declining and undermining food security in the region. This trend has been accelerated in recent years due to rapid changes in climatic conditions. Climate change adaptation and coping practices are critical to identifying vulnerable entities and developing practical, well targeted adaptation practices and policies to improve agriculture productivity. However, it is currently poorly understood and not clear how to categorise and implement climate change adaptation practices. Little information is available on their potential impact and viability. This study was conducted to establish the viability and effectiveness of climate change coping and adaptation practices at different landscape positions in Rwenzori mountain areas of south western Uganda. Household data were collected at three landscape positions on farm households and soil samples were collected from 0-15 cm and 15-30 cm depth under major crops (banana, coffee, cotton and maize). Major adaptation practices were categorized using a developed field ranking approach. Data analysis was done using Genstat software discovery version 13 for soil and yield information and SPSS version 17.0 for socio-economic data. All climate change adaptation practices identified in the study area were at different landscape positions but their responses differed significantly between locations (P>0.05). The relationship between landscape position and climate change adaptation practices, largely depending on the type of livelihood emphasized in each location and the predominant crop enterprises grown.	Journal of Scientific Research and Reports (Science Domain) **Subject Area**: Climate change adaptation practices; landscape position; soil properties

	Name	Title	Journal/Publisher
30.	Ayansina Ayanladea, Maren Radeny and John F. Morton	*Comparing smallholder farmers' perception of climate change with meteorological data: A case study from southwestern Nigeria* **Abstract:** This paper examines smallholder farmers' perceptions of climate change, climate variability and their impacts, and adaptation strategies adopted over the past three decades. We use ethnographic analysis, combined with Cumulative Departure Index (CDI), Rainfall Anomaly Index (RAI) analysis, and correlation analysis to compare farmers' perceptions in Southwestern Nigeria with historical meteorological data, in order to assess the way farmers' observations mirror the climatic trends. The results show that about 67% of farmers who participated had observed recent changes in climate. Perceptions of rural farmers on climate change and variability are consistent with the climatic trend analysis. RAI and CDI results illustrate that not less than 11 out of 30 years in each study site experienced lower-than-normal rainfall. Climatic trends show fluctuations in both early growing season (EGS) and late growing season (LGS) rainfall and the 5-year moving average suggests a reduction in rainfall over the 30 years. Climatic trends confirmed farmers' perceptions that EGS and LGS precipitations are oscillating, that rainfall onset is becoming later, and EGS rainfall is reducing. Overall impacts of climate change on both crops and livestock appear to be highly negative, much more on maize (62.8%), yam (52.2%), poultry (67%) and cattle (63.2%). Years of farming experiences and level of income of farmers appear to have a significant relationship with farmers' choice of adaptation strategies, with $r \geq 0.60$@ $p<0.05$ and $r \geq 0.520$@ $p<0.05$ respectively. The study concluded that farmers' perceptions of climate change mirror meteorological analysis, though their perceptions were based on local climate parameters. Smallholder farmers are particularly vulnerable to climate change since the majority of them do not have enough resources to cope. **Keywords:** Climate change; Smallholder farmers; Perception analysis; Nigeria	Weather and Climate Extremes Volume 15, March 2017, Pages 24–33 (Elsevier) H Index: 5 SJR Q2, 0.661 Available at: http://bit.ly/2rqjbYT

	Name	Title	Journal/Publisher
31.	E. O. Diemuodeke, S. Hamilton and A. Addo	*Multi-criteria assessment of hybrid renewable energy systems for Nigeria's coastline communities* **Abstract** **Background:** Nigeria's rural coastline communities have long suffered from the consequences of both poor rural electrification and environmental degradation. Therefore, there is an urgent need to provide an optimal sustainable and environment-friendly energy system for the coastline communities in Nigeria, which has the potential of ameliorating the climate change in this country. **Methods:** The HOMER hybrid optimisation software and multi-criteria decision-making, based on the TOPSIS algorithm, were used to determine the best hybrid energy system. The decision is based on four alternatives as well as 15 different economic, social and environmental criteria. The NASA SEE data base with monthly averaged values for global horizontal radiation over a 22-year period (July 1983–June 2005) was considered in the current analysis. **Results:** The results show that the most promising hybrid energy system, based on a multi-criteria decision analysis and prevailing economic data, is the diesel-PV-wind energy system, which has a relative closeness of 0.489226. The suggested best hybrid energy system has a cost of electricity of 0.787 $/kWh and potential to reduce gas emission by 48.5 %/year. The best energy system gives the best components with an appropriate operating strategy to provide an efficient, reliable, cost-effective and environment-friendly system. It is shown that both positive energy policies of the Federal Government of Nigeria towards renewable energy penetration and the support from the oil producing companies towards their operational areas would see the cost of electricity being significantly reduced. Conclusions: It is envisaged that the implementation of the suggested energy system with other environmentally responsible interventions would support the Niger Delta coastline communities, whose livelihoods have been impaired by gas and oil exploration, to attain their full environmental, social and economic potentials. The suggested energy system could be useful in other coastline communities globally once there are available renewable energy sources. Keywords TOPSIS HOMER Hybrid system Renewable energy	Energy, Sustainability and Society 2016 6:26 (Springer) H Index: 8 SJR Q2, 0.619 Available at: http://bit.ly/2sEyQRU

	Name	Title	Journal/Publisher
32.	Benson C. Iweriebor, Elia J. Mmbaga, Abiodun Adegborioye, Aboi Igwaran, Larry C. Obi,4 and Anthony I. Okoh	*Genetic profiling for Anaplasma and Ehrlichia species in ticks collected in the Eastern Cape Province of South Africa* Abstract **Background:** Anaplasma and Ehrlichia are emerging tick-borne pathogens that cause anaplasmosis and ehrlichiosis in humans and other animals worldwide. Infections caused by these pathogens are deadly if left untreated. There has been relatively no systematic survey of these pathogens among ticks in South Africa, thus necessitating this study. The presence of Anaplasma and Ehrlichia species were demonstrated by PCR in ticks collected from domestic ruminants at some selected communities in the Eastern Cape of South Africa. The ticks were identified by morphological characteristics and thereafter processed to extract bacterial DNA, which was analyzed for the presence of genetic materials of Anaplasma and Ehrlichia. **Results:** Three genera of ticks comprising five species were identified. The screening yielded 16 positive genetic materials that were phylogenetically related to Ehrlichia sequences obtained from GenBank, while no positive result was obtained for Anaplasma. The obtained Ehrlichia sequences were closely related to E. chaffeensis, E. canis, E. muris and the incompletely described Ehrlichia sp. UFMG-EV and Ehrlichia sp. UFMT. **Conclusion:** The findings showed that ticks in the studied areas were infected with Ehrlichia spp. and that the possibility of transmission to humans who might be tick infested is high. **Keywords:** Anaplasmosis, Ehrlichiosis, South Africa, Tick-borne	BMC Microbiol. 2017; 17: 45. Available at: http://bit.ly/2rzlyqy H index 74 SJR: Q2

	Name	Title	Journal/Publisher
33.	Portia Adade Williams, Olivier Crespo, Christopher John Atkinson and George Owusu Essegbey	*Impact of climate variability on pineapple production in Ghana* **Background:** Climate variations have a considerable impact on crop production. For pineapple, variable temperatures and rainfall patterns are implicated, yet there is limited knowledge of the conditions and consequences of such variations. Pineapple production plays a major role in Ghana, primarily via socioeconomic impacts and the export economy. The aims of this study were to assess the impact of current climatic trends and variations in four pineapple growing districts in Ghana to provide stakeholders, particularly farmers, with improved knowledge for guidance in adapting to changing climate. **Results:** Trend analysis, standardized anomaly, correlation analysis as well as focus group discussions were employed to describe climate and yields as well as assess the relationship between climate and pineapple production from 1995 to 2014. The results revealed that, relative to Ga district, temperature (minimum and maximum) in the study areas was increasing over this period at a rate of up to 0.05 °C. Rainfall trends increased in all but Nsawam Adoagyiri district. Rainfall and temperature had different impacts on production, and pineapple was particularly sensitive to minimum temperature as accounting for up to 82% of yield variability. Despite consistent report of rainfall impact on growth stages later affecting quantity and quality of fruits, minimal statistical significance was found between rainfall and yield. **Conclusions:** With continuously increasing stresses imposed by a changing climate, the sustainability of pineapple production in Ghana is challenged. This subsequently has detrimental impacts on national employment and exports capacity resulting in increased poverty. Further research to explore short- and long-term adaption options in response to challenging conditions in the pineapple industry in Ghana is suggested. **Keywords:** Pineapple Yield sensitivity Temperature and rainfall variability Ghana	Agriculture & Food Security 2017 6:26 Available at: http://bit.ly/2qNAXlR

Annex 2: Example of a Brochure Produced Using the Research Uptake Fund

GUCENJIA KWA RIERA NI NDUI?

- Gucenjia kwa riera, na njira ingi 'global warming', ni kwambata kwa urugari wa nthi.
- Kenya ni kwonekete wongerereku wa urugari wa 1˚C ta miaka 20 mivituku
- Urugari uria wa iguru muno and wa nthi muno urerigirirwa kwongerereka na 1.8-3.4˚C thiini wa century ya 21.

Maumirira ma gucenjia kwa riera kwi tutambi twa mimera na murire wa irio wa mimera miene

- Wa riera rikigendaga na mbere gucenjia, tutambi nwatwongerereke and kutherema ngina kuria tutarakoragwa turi. Urii wa irio wa mimera wanaguo nwa ucenjie
- Maundu ma riera maria matethagia tutambi na mirimu kutherema makiria makonie urugari mono makiria riria urambata, gucenjia kwa mbura na unyivu wa mai.

TUGUNYU TWA MIRI YAANI 'ROOT KNOT NEMATODES'

- Tugunyu tutu twitagwa 'nematodes', nitunini muno undu tutangioneka na metho matheri, na tukoragwa tuvana-eel na twa round tukioneka
- Tondu ni tunini muno, mundu nwa atwonire agitumira mashine itagwa 'microscope'
- Muthema uria wa tugunyu tutu uretaga thina muno ni turia tuturaga na tukaria mumera kuma miri thiini
- Tugunyu turia turicaga mimera tuvitugagira ikiro 6 cia gukura – itumbi, ikiro cingi inya cia gatagati na wisho kagunyu gagakura
- Vari mithenya 21 nginya 28, mithemba iria mingi ya tugunyu tutu, ni ikuraga kuma gwi itumbi nginya kwi kagunyu kagima kararekia matumbi mako
- Tugunyu turia tutari tukuru na turia tukuru twa njamba ni turaca na tuceke
- Tugunyu turia tukuru twa nga twa mithemba imwe ta 'root knot nematodes' tucenjagia tukaimba, tukagia muvuano ta wa 'pear'
- Kwongerereka kwa urugari na wigu thiini wa Kenya nwa kurete wangerereku wa tugunyu tutu na uguo kuthukia urimi wa ngwaci Kenya

Maruri ma kwonania ngwaci ina tugunyu tutu

- Maruri ma mwena wa iguru ria muthetu wa mumera
- Gukuma
- Kuvova wana riria kwina wigu mutheturi
- Mathangu gucenjia rangi ugatuika wa yellow na maruri mengi maria monanagia mumera utiraria wega

Maruri ma miriri

- Ngwaci gwatuka *(mbica 2A)*
- Makundo Ngwaciri *(mbica 2B)*
- Miri iria ivana ta njwiri kugia nthundo *(mbica ya 2C)*

GUTORIA TUGUNYU TUTU TWITAGWA 'NEMATODES'

- Gucenjania mimera iria iravandwa mugundari yani 'crop rotation' na gutukania na mimera iria itagwatagwa ni tugunyu tutu
- Kuvaka mathangu ma muthunga kana ' marigold leaves'
- Kuvivia ngwaci na mai maviu (47 ˚C) vandu va ndagika 65.
- Kuvivia ngwaci na riera iviu (50 ˚C) vandu va mathaa 4-8
- Gutumira ngwaci iria itagwatagwa ni tugunyu tutu e.g. SPK 004

MIRIRE YA IRIO YA MBEMBE

- Mbembe iricaga muno riria iraracava ikiumagira mathangu
- Fertilizer ciagirirwe gwikirwa mbere ya mbembe ciambiriritie kumiria mathangu
- Irio cia muthemba wa Nitrogen ni ciendekanaga kwa wingi na ni itethagia kwingivia maciaro
- Makiria ma 200kg/ha ma Nitrogen ni mendekanaga niguo 7t/ha cia mbembe cioneke
- Phosphorous ni yendekanaga riria mumera wi munini niguo miri ikure wega na mumera na mathangu maguo ukure nevenya
- Potassium nayo ni yendekanaga makiria wa ta Nitrogen.

WIKIRI WA THUMU MBEMBERI

- Eka imwe ya mugunda yendaga ta tani 2.5 cia thumu
- Thumu iria mbiu wega ikoragwa I ya rangi ya brown na irekanitie ikioneka
- Thumu yagirirwe gwikirwa mutheturi wa indi ya via viu
- Thumu niyagirirwe gutukanua wega na muthetu
- Mitheturi iri mivuthu, thumu yagirirwe gutukanua nginya urikiru wa 20cm mutheturi
- Mitheturi iria ina ndaka yani 'clay soils', thumu itandasagwa iguru ria muthetu ta macagua na uguo niutethagia tugunyu twa muthetu turia twa vata kuruta wira
- Arimi nwa mongerere mati ta ma nyaki kana mathangu ma mimera kurigiriria vinya wa thumu kura
- Ndema imwe ya fertilizer itariningani nwa yongererwe mbemberi nigwo kutethia mumera gukura tondu ngundi imwe ya thumu ina vinya munini muno wa gutethia mbembe gukura uria yagirire (mbica 3)

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Sweet Potatoe Nematodes and Maize Nutrition in a Changing Climate

Knowledge Transforms

WHAT IS CLIMATE CHANGE

- Climate change, also called global warming is the rise in average surface temperatures on Earth.
- Kenya has experienced an increase in temperature by 1°C in the last 2 decades.
- Maximum and minimum temperature is expected to increase by 1.8-4.3°C in the 21st century.

Effect of climate change on crop pests and nutrient uptake

- As the climate continues to change, pests may increase and invade previously uninhabitable areas. Uptake of nutrients by plants may also be affected.
- Climate factors that aid in pest and disease invasions are mostly temperature related and include increasing average temperatures, changes in precipitation patterns, and water shortages.

ROOT KNOT NEMATODES

- Nematodes are microscopic, eel-like roundworms.
- Nematodes are too small to be seen without a microscope.
- The most troublesome species in the garden are those that live and feed within plant roots.
- Plant-feeding nematodes go through 6 stages - an egg stage, 4 immature stages, and an adult stage.
- Many species can develop from egg to egg-laying adult in as little as 21 to 28 days.
- Immature stages and adult males are long, slender worms.
- Mature adult females of some species such as root knot nematodes change to a swollen, pearlike shape.
- Increase in temperature and moisture in Kenya may result in an increase in the rate of root nematode reproduction and abundance which may affect sweet potato production in Kenya.

Plate 1: Slender worm-like root knot nematode.

Mbica 1: *Kagunyu gaceke karia getagwa 'nematode'.*

SYMPTOMS OF ROOT KNOT NEMATODES INFECTION ON SWEET POTATO

Foliar Symptoms

- Stunting
- Premature wilting and slow recovery to improved soil moisture conditions
- Leaf chlorosis (yellowing), and other symptoms characteristic of nutrient deficiency.

Root Symptoms

- Root cracking **(Plate 2A)**
- Root knots on tubers **(Plate 2B)**
- Root galling on fibrous roots **(Plate 2C)**

Plate 2: (A) Root cracking, (B) Root knots on tubers, (C) Swellings on roots caused by root knot nematodes. The swellings contain female nematodes and their eggs.

Mbica 2: *(A) Ngwaci gwatuka, (B) Makundo Ngwaciri, (C) Miri iria ivana ta njwiri kugia nthundo.*

MANAGEMENT OF ROOT KNOT NEMATODES

- Crop rotation with groundnuts and intercropping with non host plants.
- Application of marigold leaves
- Use of nematicides
- Hot water treatment of tubers at 65 min at 47°C.
- Hot air treatment of tubers for 4-8 h at 50°C
- Use of resistant sweet potato e.g SPK 004

NUTRITION IN MAIZE

- Main period of nutrient uptake in maize is during stem extension or shooting
- Fertilizer needs to be applied before shooting.
- Nitrogen is required in large quantities and helps to maximize yield.
- Over 200kg/ha of Nitrogen is needed to sustain a 7t/ha grain maize crop.
- Phosphorus is required at early stages of crop development to ensure good root growth and to boost shoot and leaf growth.
- Potassium is needed in large quantities – at levels similar to those for nitrogen.

MANURE APPLICATION IN MAIZE

- An acre of land requires about 2.5 tonnes of manure.
- Well-composited manure is dark brown in colour and a crumbly structure.
- Manure should be incorporated into the soil as soon as it is ready.
- Manure should be completely mixed with the soil to ensure it mixes completely.
- In lighter soils, the manure should be mixed deeper into the soil (up to 20cm).
- In clay soils, manure can be applied on the surface like mulch, which helps to stimulate the microorganisms in the soil.
- Farmers can add some mulching material such as dry grass or plant leaves to prevent loss of nutrients from the manure.
- A bottle top of concentrated organic fertilizer can be added to boost the maize growth because the amount of nutrients in one handful of manure is very little and may not help the maize in meeting its nutritional requirements during the growth phase (Plate 2).

Plate 3: Maize plants on the left are grown using manure and those on the right are grown without manure.

Mbica 3: *Mbembe cia mwena wa umotho ikuritwe na thumu na cia mwena wa urio igakurwa itari thumu.*

Annex 3: Institutional Case Study - Michael Okpara University of Agriculture Umudike (MOUAU)

Summary and edited version of original text provided By Professor Phillippa Ojimelukwe

The ISP has helped transform MOUAU. An analysis of institutional gaps and weaknesses was aligned this with MOUAU's mandate - to lead research in agriculture for national development and train graduates in agricultural disciplines and equip them with entrepreneurship skills.

Priorities for institutional strengthening based on the Action Plan were:

- Developing an induction programme for new staff;
- Creating a formal researcher's forum;
- Improving the structure of career development and continuing professional development frameworks;
- Developing line management and research management training for research managers in the university;
- Creating a formal mentoring programme;
- Establishing a work ethics and a research ethics committee;
- Improving poor connectivity and low bandwidth;
- Developing a Researcher Development Framework (RDF) lens, to establish the priorities for researcher support within our institution.

An Action Plan was prepared and implemented. Despite financial constraints, MOUAU has been able to implement a number of initiatives:

- In October 2016 MOUAU conducted the first induction of staff at the university with support from university management.
- The Directorate of Research established a mentoring scheme in September, 2015.

In May 2017, mentees agreed to hold monthly meetings to improve their use of the RDF planner, learn new scientific skills and opportunities and discuss their professional development. These monthly meetings will maintain the momentum of career and professional development for the early career researchers in the university.

Other aspects of the ISP were integrated into a policy document that has been sopted by the MOUAU senate. In addition to the induction and mentoring programmes a career development unit and a human resource unit has been established. Personnel in the been trained in the HR management and career development. In the longer-term MOUAU plans to develop a Human Resource and Career Development Centre.

The university has also established a work ethics committee and a Directorate of Research, which is planning the establishment of a university Research Ethics Committee. However, funding remains a challenge.

CIRCLE supported the work through online webinars, consultancy, networking activities and through the workshops to building the capacity of senior staff at MOUAU. At a workshop for mentors and supervisors sessions with John Morton (NRI) were used to identify research gaps in the field of climate change as well as ways of more effectively conducting research into climate change through inter-disciplinary research teams.

There were also some discussions about dissemination and uptake of research through publication and engagement with stakeholder and policy-makers.

Vitae led sessions focussed on the skills needed to develop the next generation of researchers. This included proposal-writing to good practice in supervision and mentoring. There were also sessions on how to use the RDF to build Researcher Development plans and undertake a research environment audit as a precursor to strengthening the organisational culture so that it supports researchers.

Annex 5: Summary of Terms of Reference (*with comments*)

Title:	Independent review of the CIRCLE programme

Contents

1. Purpose

This document invites tenders from research /academic institutions and consulting bodies with a strong track record in programme evaluation. The successful bidder will provide a rigorous review of the Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE) programme, to provide both accountability and learning.

The review team will assess the two distinct but connected strands of the CIRCLE programme. First, the fellowships undertaken by 100 early career researchers, and second, the institutional strengthening programme undertaken by home and host institutions.

The review will be conducted while the programme is still ongoing which generates some clear challenges for assessing impact. The approach should therefore take into account methods to assess emerging and anticipated impacts with possible recommendations for longer term follow-up (2-5 years).

Submissions will be assessed on the basis of the experience demonstrated in the bid and the strength of the methodological approach(es) put forward, as well as value for money. Bidders for this tender must declare any potential conflict of interest in their tender documents.

2. The CIRCLE Programme

CIRCLE is funded by the Climate, Energy and Water team of the Research and Evidence Division, UK Department for International Development. The programme commenced in 2014, preceded by a 6 month inception phase, and it will conclude March 2018. The aim of the programme is to strengthen the capacity of early career African researchers to undertake and use research on climate change and its local impacts on development. CIRCLE is specifically focussed on supporting researchers and academics in Africa who are at an early stage of their academic career. This is seen as a vital means of sustainable impact on the evolving research culture of the institution. The programme is designed to support individual researchers as well as institutions to strengthen wider support systems for early career researchers.

The programme is managed by the Association of Commonwealth Universities (ACU) in partnership with the African Academy of Science (AAS). It also works with two other partners the Natural Resources Institute (NRI) of the University of Greenwich and Vitae, a researcher development organisation, to deliver the programme.

There follows a diagram (Figure 1) to summarise the programmes Theory of Change, and lists of expected programme outputs and programme data which will be available to the review team. Further information on CIRCLE is to be found online, including:

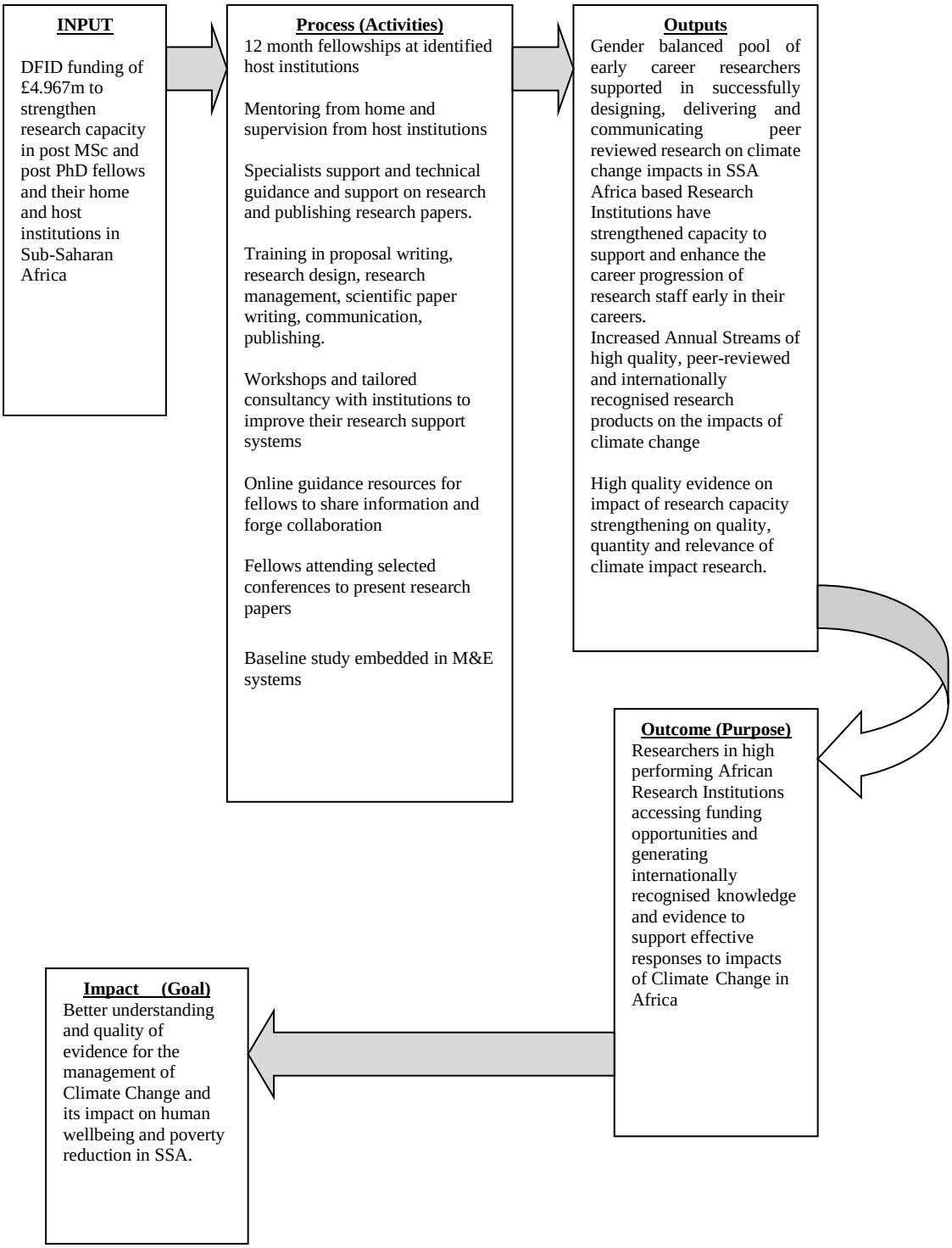
DFID Business case, Logframe and Annual Review 2016 at:

https://devtracker.dfid.gov.uk/projects/GB-1-201871/documents

Progress to date and other documentation on the ACU hosted website:

https://www.acu.ac.uk/focus-areas/early-careers/circle/

Figure 1: Theory of change for CIRCLE:



The expected outputs of CIRCLE are as follows:

1. Gender balanced pool of early career researchers supported in successfully designing, delivering and communicating peer reviewed research on climate change impacts in SSA
    a. Number of research fellows successfully completing the programme

    b. Number of research fellows who are part of teams that apply for research funding from other sources.
    c. At least 50% of CIRCLE Visiting Fellows (CVFs) are women
2. Africa based Research Institutions have strengthened capacity to support and enhance the career progression of research staff early in their careers.
    a. Number of institutions that have strengthened their provision of academic mentoring for early career researchers (ECRs)
    b. Number of institutions that have strengthened institutional policies and frameworks for career & professional development planning for research staff
    c. Number of institutions with strengthened training and support provision for early career researchers.
3. Increased annual streams of high quality, peer reviewed and internationally recognised research products on Impacts of Climate Change
    a. Number of fellows contributing to research papers that have been submitted for publication in peer-review journals, published books or are cited in policy documents.
    b. Number of fellows contributing to research papers presented at climate related conferences.
4. High quality evidence on impact of research capacity strengthening on quality, quantity and relevance of climate impact research.
    a. Clear methodology for assessing the impact of the institutional strengthening programme
    b. Shared guidance on how to support and enhance the career progression of African researchers early in their careers.
    c. Report on the scientific outputs of the CIRCLE programme

CIRCLE monitoring and other data to be made available:

- Survey of fellows on research activity to date, research support received and research support required
- Counterfactual survey of researchers who are not part of the CIRCLE programme, with comparative data on the same areas as above
- Institutional data on support provision for researchers and gaps in their early career researcher development. This extends to institutions that were not finally selected to participate in the programme but submitted an initial application.
- Workshop evaluations
- Quarterly progress reports from all stakeholders in the programme: implementing partners, fellows, supervisors, and host institutions.
- Activity on online forums and CIRCLE blog

3. Objective and Scope

This may include, as relevant and necessary, some assessment of DfID's design and planning of the programme and the Inception phase work on the programme itself. However, it is not anticipated that a discrete assessment of these phases will be within the scope[26].

The review of the following is expected, though we are open to suggestions:

CIRCLE Visiting Fellows (CVFs)

- Recruitment
- Skills development/training opportunities
- Research activity and outputs
- Dissemination, research uptake and networking opportunities
- Satisfaction levels
- Added-value of participation in the programme

Institutional Strengthening Programme (ISP)

- Activity of institutions participating in the Institutional Strengthening Programme (ISP)
- Satisfaction levels, lessons learned and systemic improvements resulting from the participation.
- Changes and developments in the institutional culture regarding research support, with particular reference to early career researchers
- Has CIRCLE had and/or is it likely to prompt institution-wide impacts; has it complemented other programmes and initiatives.

Other/Programme level

- The roles of the partner organisations in delivering the CIRCLE programme
- Level of success of CIRCLE in fostering networking and collaborative relationships
- CIRCLE in comparison to other capacity building programmes

4. Review criteria and questions

The review should be organised around the Organisation for Economic Co-operation and Development, Development Assistance Committee principles of efficiency, effectiveness, impact, coverage and sustainability.

Draft review questions are provided below, but these are not fixed and suppliers can suggest amendments to them in their proposal.

During a one month inception phase, the review supplier will refine review questions in consultation with DFID's CIRCLE project team and stakeholders as requested by DFID. Final review questions will be agreed with the DFID project team. Potential review areas and questions are as follows:

Efficiency

- Is the theory of change fit for purpose (including the causal chain, hypotheses and assumptions) and will following it lead to the intended programme outputs, outcomes and impact?
- If the theory of change is not fit for purpose, what changes are needed to the theory of change to correct the course of the programme?
- Subsidiary questions might include:
    - What alternative causal hypotheses may lead to the intended outcomes?

[26] This is not a compulsory part of the ToR and is more of an informal review to improve DFID's own design, planning and inception

Effectiveness

- What effect has the programme had on the capacity of early career African Researchers to undertake and use research on climate change and its local impacts on development?
- What is the cost effectiveness of the programme?
- Subsidiary questions might include:
    - Has there been increased awareness/interest?
    - Has there been increased uptake?

Impact

- What has been the immediate impacts, if any, of the CIRCLE programme on climate change research? What evidence is there on likely impacts?
- Subsidiary questions might include:
    - Has the theory of change been fit for purpose and led to the expected impact?
    - Has the programme had an impact on academic institutions?
    - What is the impact on other stakeholders and interested parties?
    - Has the programme had unintended impacts?

Coverage

- Who has benefited from the programme?
- Have women in particular benefitted from the programme?What coverage is seen in academic institutions?

Sustainability

- To what extent is the CIRCLE programme likely to lead to a continuation of Fellowships (This question to be considered as part of the theory of change review and at the end of the DFID-funded programme)?
- To what extent will the programme (probably) provide sustained benefits a few years after the programme ends?
- Subsidiary questions might include:
    - What factors are expected to affect the continuation of CIRCLE when programme funding ends?
    - What effect has the CIRCLE programme had on other forms of Fellowships and mentoring?

All data collected should be disaggregated on criteria that may affect efficiency, effectiveness and impact where relevant such as gender and other criteria that may affect efficiency, effectiveness and impact.

5. Methodology

Tenderers will be expected to set out a short methodological approach for the work, which can be further developed during the inception phase. We would expect a design that takes a multiple methods approach and systematically triangulates evidence. Therefore, a selection/ combination of document analysis, interviews, group discussions, meetings, surveys and/or other methods may be proposed in order to most effectively and efficiently meet the objectives of the study within the time available. Analytical methods, including for synthesis, should be described. Please note that though this is a more limited review, we are committed to quality and rigour in line with international good practice in evaluation.

Tenderers will need to supply a short methodological approach incorporating the following points, which can be developed during inception:

- Propose a review design and methodology most likely to meet the review objectives and questions that delivers the following:
    - the review objectives;
    - a high level of rigour in both data collection and analysis;
    - international best practice and innovation;
    - value for money for the review and is within budget;
    - a range of designs; and

    - the methodology proposed.
- Adopt a flexible approach to the review; and
- Consider a plan of action for promptly discussing with DFID any concerns or potential shortcomings of the methodology during implementation and suggest possible solutions.

The methodological approach will need to factor in the relatively small scale and short term nature of the CIRCLE programme. With 100 fellows spread over three one-year cycles of fellowships and 27 institutions participating in the institutional strengthening programme, this represents a relatively small sample group of academics and institutions for measurement. As part of the ongoing monitoring built into the design of the programme the review team would have access to multiple sources of existing baseline and comparative data to use and inform further data gathering.

While there is a considerable amount of existing data we would also expect that the review would involve additional data collection. We are open to different methodological approaches and part of the tender should focus on what approach(es) will be used and why. While we will not prescribe the approach we would anticipate the following elements:

- Drawing on evidence from other capacity building programmes for comparative purposes to assess the suitability and value of the CIRCLE Model
- Assessment of any baseline data and monitoring data – as outlined above
- Face-to-face interviews with:
    - institutions
    - CVFs
    - implementing organisations
    - Funders and the governing body
- Site visits to institutions to see what has been implemented
- Structured surveys (as required, but only if high response rates are viable)
- Final report and paper. The report would provide a detailed review of the programme for the funders and implementing organisations to draw out lessons and a detailed understanding of the effectiveness of the programme. The paper would be a more analytical piece on programme impact in the area of capacity strengthening.

6. Outputs

The review deliverables (with key criteria summarised in Tables 1 and 2) must be finalised before the next Annual Review to enable course correction and formative learning over the course of the programme.

Key dates for the CIRCLE programme are the following:

- Annual reviews are completed yearly in June to assess performance against the logframe, and monitor results, outcomes and value for money.
- The CIRCLE programme agreement ends on 31 March 2018 with the project completion report due in June 2018.

- The review will have a two month inception phase to refine the review programme, ending in an inception report. The winning supplier will be expected to travel to Kenya to meet with the African Academy of Science.

Table 1 Summary of review deliverables

Deliverable	Due Date	Deliverable details
Inception report and discussion.	December 2016 for discussion of draft inception report. January 2017 for final inception report.	Draft and final inception reports describing review plans should be produced as indicated* and cover the content as outlined in Table 2.
End of programme reports	March 2017 for workshop and draft reports. May 2017 for the final report Feedback to be provided by DFID no later than 2 weeks after submission in May for any final revisions	This report should be prepared as an internal DFID document.

*The deliverables should consider the following:

- Attendees at discussions and workshops should be agreed by DFID.
- The final reports, summaries and policy brief should incorporate changes agreed with DFID from these discussions and workshops.
- All deliverables should be presented to Evidence on Demand first for review The final inception report and DFID's end of programme report should contain a one page summary, three page executive summary and up to 25 page report, not including technical annexes (1:3:25 format).

It is expected that the deliverables will contain the following information, outlined in Table 2:

Table 2 - Content of review deliverables

	Inception report	End report
Review progress	X	X
Outline review plans for the duration of the programme.	X	
Validity of the theory of change including assumptions. What modifications are needed, if any? Provide recommendations.	X	X
Updated workplan including milestones, detailed methodology, timescales, budgets, skills and logistics	X	
Efficiency of the programme	X	X
Effectiveness of the programme and impact		X
Risks, concerns and challenges	X	X
Lessons learned	X	X
Recommendations for improvements – i.e. viability of extension.		X
Value for money	X	X
Sustainability	X	X
Benefit to women		X
Changes in the evidence base and implications for the programme and review.	X	X

How does evidence from implementation of the programme contribute to the wider evidence base?		X

7. Contract

The contract is from **November 2016 until June 2017 and bidders will be expected to submit a (Commercial Proposal including budget) along with the Review Proposal.**

8. Proposal

The reviewers in response to these Terms of Reference should provide a technical **proposal (no more than 8 pages)** that covers the following:

- A workplan including milestones, timescales, methodology,skills and logistics;
- Details of the proposed review methods and process;
- A high-level proposed sampling strategy including how and what data is to be collected (describe disaggregated data criteria), sample sizes, ways of ensuring data quality, and strength and weaknesses of different options.
- Details on data storage and accessibility and how data will be kept secure; and

A separate commercial proposal (no more than 4 pages with pro-formas) that covers the following:

- Fee rates (including appropriate CEIL PEAKS consultancy band requirements)
- Expected project costs
- Milestone payment schedule
- Demonstrates why the proposal offers best value for money in terms of meeting the objectives of the Terms of Reference whilst ensuring the best use of resources? Also describes the trade-offs that have been considered

Payment will be based on successful delivery and approval of deliverables by DFID.

8. Skills and experience

The review team is expected to be able demonstrate the following:

Essential:

- An understanding of capacity building/strengthening programmes in Africa and in higher education
- Awareness of climate change imperatives and initiatives in Africa
- Proven experience in evaluation design including quantitative and qualitative research methods to conduct studies to academic standards
- Understanding the strengths and limitations of different methodological approaches and how to accurately interpret data;
- Ability to communicate complex studies and findings in an accessible way for technical and non-technical readers, including presentation of data in visually appealing ways & well structured, rigorous summaries of findings.
- Capability to integrate gender and social inclusion throughout the review

Desirable:

- Experience of conducting reviews in Africa.
- Experience of conducting research/academic/fellowship reviews.
-
- We recognise that few closely related studies have been conducted. So we would not wish to deter otherwise well qualified bidders who have limited or no experience in one or two of these criteria.

9. Ethics

Proposals should outline their view of the ethical considerations for this review and spell out how they plan to address these.

Specifically, suppliers will be expected to have an ethics policy and ethical clearance protocols where appropriate on the use of data to protect confidentiality of individuals and project documents. Bids should set out how they propose to ensure the confidential treatment of project documentation and data collected throughout the review.

10. Risks

Bids should demonstrate an active approach to managing risks to the review. They should set out what they think are the main risks to the review and how they will be managed.

11. Quality Assurance

Bids should set out how they will ensure quality throughout the review. The DFID review management group will comment thoroughly on all deliverables, to enable these to be strengthened and finalised. However, the review team is expected to have a process to assure that all first drafts are of a good standard, and that do not require DFID to identify fundamental weaknesses or omissions.

DFID must provide feedback on Inception and Final Report within 2 weeks of receipt. If no feedback is provided in this period, the project is considered closed and suppliers can send their invoices in.

12. Management and Responsibilities

The review will be managed by Evidence on Demand. The Evidence on Demand project manager should be the main point of contact throughout the review. The winning supplier can contact the Senior Responsible Owner (SRO) in DFID on technical matters relating to this project and the Evidence on Demand Project Manager on administrative issues.

A Management Group will be established to oversee the review. This group will be responsible for approving the outputs and commenting on draft reports. It will be comprised of at least the following: the SRO for the programme (chair); Programme Manager; RED's Evaluation Adviser; a further DFID member of staff and/or an external stakeholder who is not involved in implementation of the programme.

The review supplier should liaise with the ACU, AAS, VITAE and NRI as agreed by DFID while maintaining an independent review. DFID has will agree with ACU that they work with the review supplier as required to ensure that monitoring data adequately informs the review.

The supplier should comply with DFID's Duty of Care (see Annex).

13. Other Requirements

The review supplier will determine the most effective form of the delivery for this review ensuring value for money in terms of expertise, structure and capability in their bids and explaining why the proposed approach offers best value for money. The review supplier will be selected following competition. The supplier should demonstrate that they have the range of skills and capability required to effectively design, plan and deliver all the requirements set out in the ToR above. Where there is a consortium or partnership, the lead supplier will be expected to manage the consortium and lead the effective design, management and implementation of the review and take action to tackle any poor performance.

The review supplier will be required to demonstrate a strong commitment towards transparency, financial accountability and due diligence of approved partners, and to exhibit zero tolerance to corruption and fraud. The review supplier will need to comply with DFID's policies on fraud and anti-corruption and cooperate with checks and balances programme staff will require from them for the duration of the review.

Suppliers seeking to apply for the independent review should take into account the following:

- The supplier should be prepared to operate independently for the duration of the contract, this includes logistical support.
- All review outputs, including design, will be subject to DFID quality assurance processes.
- The main recipient of the services is DFID. Reports will also be made available to other stakeholders including ACU, AAS, VITAE and NRI as requested by DFID.
- The supplier grants DFID an irrevocable right to publish and re-use the outputs from the review.

To ensure access to key suppliers in a limited market lead suppliers are reminded of DFID's statement of Priorities and Expectations for suppliers which states: suppliers should apply a strong emphasis on building local capacity by proactively seeking ways to develop local markets and institutions and **refraining from the use of restrictive exclusivity agreements**.

Annex Duty of care

The Supplier is responsible for the safety and well-being of their Personnel and Third Parties affected by their activities under this contract, including appropriate security arrangements. They will also be responsible for the provision of suitable security arrangements for their domestic and business property.

DFID will share available information with the Supplier on security status and developments in-country where appropriate. DFID will provide the following:

- All Supplier Personnel will be offered a security briefing by the British High Commission/DFID on arrival. All such Personnel must register with their respective Embassies to ensure that they are included in emergency procedures.
- A copy of the DFID visitor notes (and a further copy each time these are updated), which the Supplier may use to brief their Personnel on arrival.

The Supplier is responsible for ensuring appropriate safety and security briefings for all of their Personnel working under this contract and ensuring that their Personnel register and receive briefing as outlined above. Travel advice is also available on the FCO website and the Supplier must ensure they (and their Personnel) are up to date with the latest position.

Tenderers must confirm in their proposal response that:

- They fully accept responsibility for Security and Duty of Care.
- They understand the potential risks and have the knowledge and experience to develop an effective risk plan.
- They have the capability to manage their Duty of Care responsibilities throughout the life of the contract.

If you are unwilling or unable to accept responsibility for Security and Duty of Care as detailed above, your proposal will be viewed as non-compliant and excluded from further review.

Acceptance of responsibility must be supported with evidence of Duty of Care capability and DFID reserves the right to clarify any aspect of this evidence.

Annex 6: Terms of Reference for CVFs

Article 1 - Introduction

The Climate Impact Research Capacity and Leadership Enhancement in Sub-Saharan Africa programme (CIRCLE) is an initiative of the Department for International Development (DFID) of the United Kingdom (UK) to develop the skills and research output of early career African researchers in the field of climate change and its local impacts on development. The programme will run from 2014 to 2018.

The three main objectives of the CIRCLE fellowship programme are:

vi) To strengthen research capacity in Sub-Saharan African research institutions to support early career researchers and develop a coordinated and strategic approach to climate change research;

vii) To strengthen the capacity of African researchers to undertake research on climate change and its local impacts on development;

viii) To strengthen the capacity of the African Academy of Sciences (AAS) to set and implement research programmes based on credible commissioning and peer-review processes.

The programme will offer one year Fellowships to support research proposals on the impact of climate change in Africa, with up to 100 fellowships funded over three years. Fellowships will be available for 40 post-Masters researchers and 60 post-Doctoral researchers. The fellowships will be specifically targeted at early career African researchers nominated by their home institutions in Africa and hosted by African universities and research institutions. Both home and host institutions will receive support and training to develop their institutional research capacity, with an emphasis on supporting early career researchers. Fifty percent of the fellowships will be awarded to female candidates.

CIRCLE is being implemented by the African Academy of Sciences (AAS) and the Association of Commonwealth Universities (ACU).

Article 2 – Definitions

In this document, unless the context requires otherwise, the following terms shall have the following meaning:

2.1. Home Institution: the institution from which the early career African researcher is nominated and to which they are expected to return at the end of the fellowship.

2.2. Host institution: the institution at which the nominated earlier career African researcher will be placed for a maximum period of one year to undertake his/her research. The Host Institution will have recognised expertise in climate impact research and researcher support systems that can offer learning opportunities to the selected fellows.

2.3. CIRCLE Visiting Fellow (CVF): the early career African researcher benefiting from funding under the CIRCLE Fellowship programme.

Eligibility criteria for CVFs:

ix) Member of staff at a Home Institution

x) Has a Master's degree or higher

xi) Doctorate holders must be within 5 years of receiving their doctoral degree or 7 years if they have had time out for childcare purposes

xii) Has not held an academic post (at lecturer/equivalent level or above) for longer than 7 years.

xiii) Is not currently studying for the PhD (applicants who put their PhD on hold for the duration of the Fellowship will be considered)

xiv) Does not hold a senior position within the university (above lecturer level)

2.4. "Programme Implementation Team" or "Implementing Organisation" refers to one or all of the African Academy of sciences (AAS), the Association of Commonwealth Universities (ACU) and their designated staff.

2.5. Mentor: a senior member of staff at the Home Institution appointed to assist the CVF in their preparation for the fellowship, to maintain a link with the CVF during their fellowship and to support their post-fellowship research career development.

2.6. Supervisor: a senior researcher at the Host Institution appointed to provide the primary research support to the CVF during their fellowship. The supervisor will assist the CVF to undertake and complete their research within the period of the Fellowship.

2.7. Specialist Advisor: a senior researcher of international standing who will provide additional support to the CVF in the design and progress of their research, assisting with the final manuscript and dissemination of the research. The identification and allocation of a Specialist Advisor will be conducted by a consortium led by the Natural Resources Institute at the University of Greenwich.

2.8 Vitae: A researcher development organisation that will provide support and training to CVFs to develop and progress their research career. Vitae will also work with participating institutions to develop their research support provision.

Article 3 – Responsibilities of the CIRCLE Visiting Fellow (CVF):

Fellowship Research:

3.1. Develop a feasible research proposal to be *executed within a period of one year*. Developing the proposal should be done in consultation with the appointed Mentor at the Home Institution. Please refer to the guidelines for applicants.

3.2. The proposed research must be suitable for conducting outside of the CVF's Home Country.

3.3. CVFs must conduct the research set-out in the proposal submitted for review; revisions can be made to the proposal in consultation with the Host Supervisor and Specialist Advisor.

3.4. CVFs must be the sole or principal investigator on the research being undertaken.

3.5. The research must not be part of an ongoing PhD programme. It must be a discrete one year research project with its own timelines and deliverables.

3.6. CVFs must take responsibility for conducting risk assessments, and take responsibility for the health and safety of others and reducing hazards.

Publication and dissemination

3.7. CVFs must produce at least one research article on the study conducted as part of the fellowship for submission to an internationally recognised peer-reviewed journal.

3.8. In compliance with the Research Open and Enhanced Access Policy of the UK Department for International Development all publications emerging from CIRCLE funded research should be published in an open access manner. A publication fund is available to support publication in open access journals.

3.9. CVFs are also expected to manage their data effectively in accordance with the Research Open and Enhanced Access Policy and should complete an Access and Data Management Plan upon selection as a CIRCLE fellow. Any datasets that support published CIRCLE research should be deposited in a suitable open access discipline or institutional repository within 12 months of final data collection.

3.10. CVFs must make presentations on the research being undertaken and its findings at seminars, colloquia, workshops and conferences and other appropriate events organised internally at the Host Institution or at relevant external events.

3.11. Contribute to publications or disseminate research findings using media appropriate to the discipline.

Collaboration and external engagement

3.12. Identify other collaborators for current/on-going and/or future research, including other CVFs, other climate change initiatives in Africa, other academics within the home or host institution or through networks identified by the Specialist Advisor.

3.13. Participate in and develop external networks, for example to identify sources of funding, generate income, obtain consultancy projects, or build relationships for future activities.

3.14. Actively pursue and apply for other external research funding grants, either alone or in collaboration with colleagues.

Responsibilities at the host institution

3.15. Comply with all ethical requirements of the Host institution.

3.16. Comply with intellectual property rights policies of the host institution provided this does not conflict with the DfID requirement for open access publication. Where the host institution requires the CVF to sign a contract this should be shared with the implementation team.

3.17. Get involved in activities at the Host Institution, including mentoring colleagues with less experience, advice on professional development, and support colleagues in developing their research techniques.

3.18. Participate in any agreed research programmes and training at the host institution.

Responsibilities to the home institution

3.19. Extend, transform, apply and share the knowledge and skills acquired from the CIRCLE Fellowship on return to your Home Institution.

3.20. Be an ambassador for your home institution whilst on your fellowship.

Programme responsibilities

3.21. Participate in pre-Fellowship and post-Fellowship workshops organised by the Programme Implementation Team.

3.22. Provide quarterly reports on research progress by the deadline specified.

3.23. Use all funds received through the CIRCLE programme for their stated purposes and where applicable provide receipts.

3.24. Report any problems, conflicts and unauthorised absences to the programme Implementation Team in writing

3.25. Read these Terms of Reference and agree to the provisions set-out above.

Article 4 – Prohibition

4.1. CIRCLE Visiting Fellows are bound to return to their Home Institution after the completion of the Fellowship. If the CVF resigns from the Home Institution at any point during the course of the Fellowship, the Fellowship will be terminated with immediate effect.

4.2. The CVF shall not take-up an offer of employment at the host institution within a period of one full academic year after the completion of the CIRCLE fellowship. This is to ensure that CVFs return to their home institution with the knowledge gained from the fellowship to help in developing the research and training capacity of their home institutions, in line with the objectives of the CIRCLE fellowship.

4.3. If a host institution employs a CVF within the time-frame referred to in 4.2., it will be liable to pay compensation to the home institution equivalent to the combined value of the fellowship and one year of wages of the individual at the time the offer of employment is made. CVFs may also be subject to penalising terms from their home institution.

4.4. Any misuse or mis-appropriation of CIRCLE funds and resources will be grounds for immediate termination of the fellowship.

Article 5 – Financial Terms

5.1. The maximum value of the CIRCLE Visiting Fellowship differs for Post-Masters and Post- Doctorate CVFs:

The approximate maximum value for: Post-Doc fellowships: US$37,918 Post-Masters fellowships: US$34,354

This amount is a combination of direct costs paid to the CVFs such as the stipend and accommodation allowance, plus requested funds drawn from the Research Support Grant, Conference Fund and Publication fund. Other costs are paid on behalf of the fellow such as travel costs to the host institution and bench fees to the host institution.

5.2. Fellows receive a pre-payment of $1500 before they arrive at the host institution to provide them with funds to settle into the host country. The balance of the first quarter stipend and accommodation payment will be sent upon signing of the Arrival Notice at the Host Institution. The stipend is meant to cover the day-to-day living costs of the CVF whilst at the host institution. The total allowance for stipend and accommodation will be paid at:

Post-Doc fellowships: US$20,674 (includes $6,740 allowance for accommodation)

Post-Masters CVFs: US$19,325 (includes $6,740 allowance for accommodation)

5.3. Stipends may be remitted directly to CVF or via the host institution. Payments will be made quarterly upon receipt of the quarterly report from the CVF and their supervisor.

5.4. Payments of all financial commitments under the fellowship will commence from the start of fellowship as evidenced by the "Arrival Notice" submitted by the Host Institution. Payment terms will run from 01 January 2017-31 December 2017, unless otherwise agreed by the Programme Implementation Team.

5.5. CVFs will not be entitled to receive their full monthly stipend if they are absent from the Host Institution for more than 14 days during a given month for *non-research purposes and without prior agreement*. Attendance at conferences, fieldwork and visits to archives and libraries etc., which are instrumental to the research project, do not count as non-research absences.

5.6. Fellows must arrive at their host by the 13 January 2017 to receive their full payment for the first quarter. Arrivals after this date that have not been previously agreed by the Implementation Team will be subject to a pro-rated reduction.

5.6 Research funds: CVFs will be eligible to apply for a Research Grant of up to:

- Post-Masters Fellow: $5056
- Post-PhD Fellow: $6742

These funds are to contribute to direct research costs and cannot be used for any other purposes.

Article 6 – Travel

6.1. The African Academy of Sciences will issue all international travel tickets for CIRCLE Visiting Fellows taking up their placements at the Host Institution. This will be done in consultation with the CVF once the agreed start and end dates are settled.

6.2. Obtaining a travel visa is the responsibility of the CVF. The African Academy of Sciences shall issue the necessary letters and provide supporting documents to assist the person in making travel arrangements, liaising with the host to ensure that all documentation is received in good time.

6.3. CVFs are responsible for obtaining insurance for their fellowship year but costs should be confirmed with AAS before purchase. Costs for insurance will be reimbursed by AAS.

6.4. Local travel for CVFs within the fellowship period will be organised by agreement with the Host Institution and Home Institution as applicable in terms of their location.

Article 7 – Accommodation

7.1. It is the responsibility of the CVF to find accommodation in the host country with help from the host institution. This should be done well before your arrival in the host country.

7.3. The CIRCLE Fellowship will support Fellows' accommodation for a maximum of 12 months at an approved cost TBC. The money for accommodation will be remitted with the stipend.

7.4. All accommodation expenses must be submitted with receipts to the African Academy of Sciences. The Fellowship is for a maximum of 12 months and accommodation costs should not exceed this period.

Article 8 – Termination

8.1. If the Programme Implementation Team considers that the CVF is not meeting his/her obligations, it shall have the right to terminate the Fellowship immediately by giving the CVF, Host Institutions and Home Institutions a one-month written notice of the reasons.

8.2. The CIRCLE Fellowship award may be terminated at any time by the Programme Implementation Team upon a one-month prior written notice. The programme team and the host and home institutions shall decide by mutual agreement on the conditions for termination and any consequences of the termination.

Annex 7: Terms of Reference for Home Institutions

Introduction

The Climate Impact Research Capacity and Leadership Enhancement in Sub-Saharan Africa programme (CIRCLE) is an initiative of the Department for International Development (DFID) of the United Kingdom (UK) to develop the skills and research output of early career African researchers in the field of climate change and its local impacts on development. The programme will run from 2014 to 2018.

The three main objectives of the CIRCLE fellowship programme are:

- To strengthen research capacity in Sub-Saharan African research institutions to support early career researchers and develop a coordinated and strategic approach to climate change research;
- To strengthen the capacity of African researchers to undertake research on climate change and its local impacts on development;
- To strengthen the capacity of the African Academy of Sciences (AAS) to set and implement research programmes based on credible commissioning and peer-review processes.

The programme will offer one year Fellowships to support research proposals on the impact of climate change in Africa, with up to 100 fellowships funded over three years. Fellowships will be available for 40 post-Masters researchers and 60 post-Doctoral researchers. The fellowships will be specifically targeted at early career African researchers nominated by their home institutions in Africa and hosted by African universities and research institutions. Both home and host institutions will receive support and training to develop their institutional research capacity, with an emphasis on supporting early career researchers. Fifty percent of the fellowships will be awarded to female candidates.

CIRCLE is being implemented by the African Academy of Sciences (AAS) and the Association of Commonwealth Universities (ACU).

Article 2 – Definitions

In this document, unless the context requires otherwise, the following terms shall have the following meaning:

2.1. Home Institution: the institution from which the early career African researcher is nominated and to which they are expected to return at the end of the fellowship.

2.2. Host institution: the institution at which the nominated earlier career African researcher will be placed for a maximum period of one year to undertake his/her research. The Host Institution will have recognised expertise in climate impact research and researcher support systems that can offer learning opportunities to the selected fellows.

2.3. CIRCLE Visiting Fellow (CVF): the early career African researcher benefiting from funding under the CIRCLE Fellowship programme.

Eligibility criteria for CVFs:

- Member of staff at a Home Institution
- Has a Master's degree or higher
- Doctorate holders must be within 5 years of receiving their doctoral degree or 7 years if they have had time out for childcare purposes
- Has not held an academic post (at lecturer/equivalent level or above) for longer than 7 years.
- Is not currently studying for the PhD
- Does not hold a senior position within the university (above lecturer level)

2.4. "Programme Implementation Team" or "Implementing Organisation" refers to one or all of the African Academy of sciences (AAS), the Association of Commonwealth Universities (ACU) and their designated staff.

2.5. Mentor: a senior member of staff at the Home Institution appointed to assist the CVF in their preparation for the fellowship, to maintain a link with the CVF during their fellowship and to support their post-fellowship research career development.

2.6. Supervisor: a senior researcher at the Host Institution appointed to provide the primary research support to the CVF during their fellowship. The supervisor will assist the CVF to undertake and complete their research within the period of the Fellowship.

2.7. Specialist Advisor: a senior researcher of international standing who will provide additional support to the CVF in the design and progress of their research, assisting with the final manuscript and dissemination of the research. The identification and allocation of a Specialist Advisor will be conducted by a consortium led by the Natural Resources Institute at the University of Greenwich.

2.8 Vitae: A researcher development organisation that will provide support and training to CVFs to develop and progress their research career. Vitae will also work with participating institutions to develop their research support provision.

Article 3 – Responsibilities of the home institution Nominating and supporting CVFs:

3.1. Shall nominate at least one early career researcher within the institution, according to the criteria set out in 2.3, to participate in each cohort the CIRCLE Fellowship programme.

3.2. Shall commit to nominating high quality candidates and identifying suitable female candidates.

3.3. Shall provide the CIRCLE Visiting Fellow (CVF) with all necessary support in developing a research proposal for submission to the CIRCLE Fellowship Programme. The support must include institution-wide support in identifying collaborators from other departments/faculties and time to develop and refine research proposal.

3.4. Shall appoint a senior researcher within the institution as a mentor to the CVF. The Home Institution Mentor will guide the CVF in identification of a suitable research topic; support in developing his/her proposal; maintaining links with the CVF during their fellowship and supporting the post-fellowship research career development. The primary role of the mentor is not to supervise the research undertaken during the fellowship but to support the research and career development of the CVF. The Mentorship responsibility extends to a period of not less than thirty months, including the period spent at the host institution. The mentor shall take responsibility in following-up the work of the CVF at the host institution by receiving reports and making input into the work of the CVF.

3.5. Shall assist the CVF to re-settle once the fellowship has concluded.

3.6. Shall provide opportunities to the CVF to extend, transform, apply and share the knowledge and skills acquired from the CIRCLE Fellowship on their return to the Home Institution

3.7. While the CVF is on the CIRCLE fellowship, the Home Institution is expected to maintain a full employer- employee relationship with the CVF with all its benefits. The institution is expected to recognise the CVF as staff on research training.

Institutional strengthening programme:

3.8. The Home institution shall commit to supporting early career researchers in their institution and to the strengthening and maintenance of a research culture in the institution.

3.9. Shall participate actively in the institutional strengthening programme (ISP), which will involve policy and strategy development and the implementation and institutionalisation of support mechanisms for returning fellows and early career researchers more broadly. More specifically, the home institution will be expected to:

- participate in annual ISP workshops and work toward developing and implementing good practice principles for early career support;
- develop or enhance a mentoring scheme for early career academics;
- develop a strategy for supporting and developing the career progression of early career researchers;
- utilise the tools and material provided by the ISP to develop a framework for the continuing professional development of early career researchers;

- identify a suitable individual or individuals within the institution who will attend workshops and receive training to provide professional development support to early career researchers.

Programme responsibilities:

3.10. Shall appoint a CIRCLE coordinator who liaises effectively between the institution and Programme Implementation Team.

3.11. Shall comply with CIRCLE deadlines and reporting requirements.

3.12. Participates in workshops and events organized for institutions participating in the CIRCLE programme 3.13. Use all funds received through the CIRCLE programme for their stated purpose.

3.14. Report any problems and conflicts to the programme Implementation Team in writing.

3.15. Read these Terms of Reference and agree to the provisions set-out above.

Article 4 – Commitment to CVF

4.1. It is expected that the Home Institution will continue to recognise the CVF as staff of the institution and pay all or part of the CVF's salary while they are on fellowship for the maximum one year duration.

Article 5 – Termination

5.1. If the Programme Implementation Team considers that the CVF and/or the Home Institution is not meeting its obligations, it reserves the right to terminate the Fellowship immediately by giving the CVF, Host Institutions and Home Institutions a one-month written notice of the reasons.

5.2. Inadequate participation of the home institution in the institutional strengthening programme, as judged by the Programme Implementation Team, may result in termination of the home institutions' participation in CIRCLE.

5.3. The CIRCLE Fellowship award may be terminated at any time by the Programme Implementation Team upon a one-month prior written notice. The programme team and the host and home institutions shall decide by mutual agreement on the conditions for termination and any consequences of the termination.

5.4. Any misuse or mis-appropriation of CIRCLE funds and resources will be grounds for immediate termination of participation in the CIRCLE programme.

Annex 8: Terms of Reference – Host institutions

Article 1 - Introduction

The Climate Impact Research Capacity and Leadership Enhancement in Sub-Saharan Africa programme (CIRCLE) is an initiative of the Department for International Development (DFID) of the United Kingdom (UK) to develop the skills and research output of early career African researchers in the field of climate change and its local impacts on development. The programme will run from 2014 to 2018.

The three main objectives of the CIRCLE fellowship programme are:

i) To strengthen research capacity in Sub-Saharan African research institutions to support early career researchers and develop a coordinated and strategic approach to climate change research;

ii) To strengthen the capacity of African researchers to undertake research on climate change and its local impacts on development;

iii) To strengthen the capacity of the African Academy of Sciences (AAS) to set and implement research programmes based on credible commissioning and peer-review processes.

The programme will offer one year Fellowships to support research proposals on the impact of climate change in Africa, with up to 100 fellowships funded over three years. Fellowships will be available for 40 post-Masters researchers and 60 post-Doctoral researchers. The fellowships will be specifically targeted at early career African researchers nominated by their home institutions in Africa and hosted by African universities and research institutions. Both home and host institutions will receive support and training to develop their institutional research capacity, with an emphasis on supporting early career researchers. Fifty percent of the fellowships will be awarded to female candidates.

CIRCLE is being implemented by the African Academy of Sciences (AAS) and the Association of Commonwealth Universities (ACU).

Article 2 – Definitions

In this document, unless the context requires otherwise, the following terms shall have the following meaning:

2.1. Home Institution: the institution from which the early career African researcher is nominated and to which they are expected to return at the end of the fellowship.

2.2. Host institution: the institution at which the nominated earlier career African researcher will be placed for a maximum period of one year to undertake his/her research. The Host Institution will have recognised expertise in climate impact research and researcher support systems that can offer learning opportunities to the selected fellows.

2.3. CIRCLE Visiting Fellow (CVF): the early career African researcher benefiting from funding under the CIRCLE Fellowship programme.

Eligibility criteria for CVFs:

- Member of staff at a Home Institution
- Has a Master's degree or higher
- Doctorate holders must be within 5 years of receiving their doctoral degree or 7 years if they have had time out for childcare purposes
- Has not held an academic post (at lecturer/equivalent level or above) for longer than 7 years.
- Is not currently studying for the PhD
- Does not hold a senior position within the university (above lecturer level)

2.4. "Programme Implementation Team" or “Implementing Organisation” refers to one or all of the African Academy of sciences (AAS), the Association of Commonwealth Universities (ACU) and their designated staff.

2.5. Mentor: a senior member of staff at the Home Institution appointed to assist the CVF in their preparation for the fellowship, to maintain a link with the CVF during their fellowship and to support their post-fellowship research career development.

2.6. Supervisor: a senior researcher at the Host Institution appointed to provide the primary research support to the CVF during their fellowship. The supervisor will assist the CVF to undertake and complete their research within the period of the Fellowship.

2.7. Specialist Advisor: a senior researcher of international standing who will provide additional support to the CVF in the design and progress of their research, assisting with the final manuscript and dissemination of the research. The identification and allocation of a Specialist Advisor will be conducted by a consortium led by the Natural Resources Institute at the University of Greenwich.

2.8 Vitae: A researcher development organisation that will provide support and training to CVFs to develop and progress their research career. Vitae will also work with participating institutions to develop their research support provision.

Article 3 – Responsibilities of the host institution

Supervision, resource and induction support for CVF:

3.1. Shall appoint a senior researcher within the institution to be the supervisor of the CVF. The supervisor will guide the CVF in undertaking their research/study. The supervision responsibility will last for the duration of the fellowship. It is also expected to include some months before the fellowship to fine tune the proposal before the arrival of the CVF at the Host Institution. The person appointed as supervisor must have the capacity to:

i) guide the CVF in structuring the topic of their research;

ii) fine-tune the research proposal of the CVF;

iii) identify internal and external collaborators for the research, where appropriate;

iv) liaise with the CVF and Home Mentor during the research period;

v) promote co-publication of research findings, where appropriate;

vi) identify potential publishers;

vii) identify conferences and workshops for the CVF to attend and present their research

viii) assist the CVF in developing their research communication skills;

ix) follow-up with the CVF on integration into ongoing research at their home institution on return.

3.2. Shall provide the CVF with space and facilities to undertake research within the institution for the fellowship period, not exceeding 12 months.

3.3. Shall provide training and access to courses available within their institution that will support and develop the research skills of the CVF.

3.4. Shall help the CVF settle into the host country and the institution to commence the one year fellowship. It is expected that CVFs will be given a full induction at the host institution; including but not limited to introducing them to the staff, resources and facilities they will have access to during the course of their fellowship, as well as the ethics and ethos in scientific research at the host institution.

3.5. The Host Institution shall establish a monitoring system to assess periodically the status of the work being undertaken by the CVF. This might include the organisation of seminars at the institution for the CVF to share their findings.

Institutional strengthening programme:

3.6. Host institutions will have the opportunity to participate in the Institutional strengthening Programme (ISP), although this is not compulsory. The ISP will involve policy and strategy development and the implementation and institutionalisation of support mechanisms for early career researchers. More specifically, if the host institution chooses to participate it will be expected to:

i) participate in annual ISP workshops and work toward developing and implementing good practice principles for early career support;

ii) develop or enhance a mentoring scheme for early career academics;

iii) develop a strategy for supporting and developing the career progression of early career researchers;

iv) utilise the tools and material provided by the ISP to develop a framework for the continuing professional development of early career researchers;

v) identify a suitable individual or individuals within the institution who will attend workshops and receive training to provide professional development support to early career researchers.

vi) participation in all workshops organised as part of this programme

Programme responsibilities:

3.7. Shall appoint a CIRCLE coordinator who liaises effectively between the institution and Programme Implementation Team.

3.8. Shall comply with CIRCLE deadlines and reporting requirements.

3.6. Timely provision of all the necessary pre-departure documentation.

3.9. Where applicable, to receive and remit stipends and other agreed payments to the CVFs in a timely fashion. Payment schedule to be agreed between the Host Institution, the Programme Implementation Team and the CVF.

3.10. Use all funds received through the CIRCLE programme for their stated purpose.

3.11. The Host Institution must inform the Programme Implementation Team of any unauthorised absenting of the CVF from the institution which is not related to CIRCLE, including withdrawal from the programme.

3.12. The Host Institution must make the CVF sign an “Arrival Notice” upon arriving at the institution, indicating the date of arrival. The Arrival Notice should be promptly forwarded to the Programme Implementation Team to indicate the commencement of stay at the institution.

3.13. The host institution must make the CVF sign a “Departure Notice” one month prior to the expiration of the Fellowship, indicating when the CVF will be leaving the Institution to return to their Home Institution, this should be forwarded to the Programme Implementation Team.

3.14. Report any problems and conflicts to the programme Implementation Team in writing.

3.15. Read these Terms of Reference and agree to the provisions set-out above.

Article 4 – Prohibition

4.1. The host institution shall not make an offer of employment to a CVF it has hosted within a period of one full academic year after the completion of the CIRCLE fellowship. This is to ensure that CIRCLE Visiting Fellows return to their home institution with the knowledge gained from the fellowship to help in developing the research and training capacity of their home institutions, in line with the objectives of the CIRCLE fellowship.

4.2. In case a host institution employs a CVF within the time-frame referred to in 4.1., it will be liable to pay compensation to the home institution equivalent to the combined value of the fellowship and one year of wages of the individual at the time the offer of employment is made.

Article 5 – Bench fee

5.1. The CIRCLE fellowship will provide to host institutions a research cost subsidy in terms of a bench fee and supervision fee.

Article 6 – Reporting

6.1. The Host Institution shall submit quarterly technical and administrative reports on the progress of work by the CVF to the Programme Implementation Team. The technical reports should be copied to the home institution.

6.2. The Host Institution shall transmit Final and/or Annual Project Reports on the CIRCLE Fellowship Programme to the Programme Implementation Team on an agreed timetable. Annual Project Reports shall have an operational part that describes the progress of the CVF and a financial part (Financial Report) containing summary data on the financial progress for the reporting year as well as cumulative data to date.

Article 7 – Termination

7.1. If the Programme Implementation Team considers that the Host Institution is not meeting its obligations, it shall have the right to terminate the Fellowship immediately by giving the CVF, Host Institutions and Home Institutions a one-month written notice of the reasons.

7.2. The CIRCLE Fellowship award may be terminated at any time by the Programme Implementation Team upon a one-month prior written notice. The programme team and the host and home institutions shall decide by mutual agreement on the conditions for termination and any consequences of the termination.

7.3. Any misuse or mis-appropriation of CIRCLE funds and resources will be grounds for immediate termination of participation in the CIRCLE programme.

Annex 9: Summary of Recent Achievements

Cohort 1

The latest quarterly report from fellows recorded the following achievements (January 2017)

- 21/26 fellows reported their experience at the home institution during the last 6 months as good or very good
- 11/26 respondents had been promoted in the last 6 months. Six of these promotions were attributed to their participation in CIRCLE.
- 17/26 CVFs are currently undertaking research linked to their CIRCLE fellowship.
- 14/26 are currently a mentor at their institution and one of these is currently mentoring CIRCLE fellows.
- 10/26 CVFs continue to use the RDF, most of these at least every few months.
- Half of the 26 respondents are part of their institution's institutional strengthening programme. Those who are not currently involved were interested in participating.
- 23/26 CVFs are still in contact with their host institution supervisor and 20/26 CVFs are still in contact with colleagues from their host institutions. 14/26 are still in contact with their specialist advisor. 18 CVFs had submitted or had published a total of 42 **publications** during the last six months. 17 had submitted 35 peer reviewed journal articles and 12 had had a total of 23 peer reviewed articles published. 16 had submitted 22 peer-reviewed articles on their CIRCLE research 10 CVFs had had twelve article published.
- 17/26 CVFs had been involved in a total of 37 **grant/funding applications**, 12 involving the home institution, 2 involving the host and 6 involving other CVFs.
- 17/26 CVFs had been involved in 69 **collaborations**.
- 17 CVFs had attended 35 **conferences or events** in total and 15 CVFs had presented at 25 events with nine CVFs presenting their CIRCLE research at 14 events.

Cohort 2

161. Reports have been received from all 29 cohort 2 fellows

- All fellows reported that their overall CIRCLE experience has at least been good and 28/29 as very good. This is up on cohort 1 where 73% reported their experience as very good, 21% as good and 6% as satisfactory or poor.

- All but one CVF have plans to undertake further research related to their CIRCLE research after the fellowship.
- 23/29 CVFs had used the RDF at least every few months. Only one CVF had never used it.
- 14/29 had applied for the research uptake fund, 9 of which were successful. 27/29 intends to apply in the next call, which will open in February. The two that don" t intend to apply have already successfully received funding.
- All CVFs indicated that they had engaged with stakeholders for their research Support received from: Host: 26/29 good/excellent (1 bad) Supervisor 24/29 good/excellent (2 bad) Home institution: 27/29 good/excellent Mentor 24/29 good/excellent (1 bad) Specialist advisor 24/29 good/excellent (2 bad) AAS support 29/29 good/excellent Vitae support 27/29 good/excellent ACU support 28/29 good/excellent Financial support 28/29 good/excellent Where a bad rating was given, this will be investigated further. 19 CVFs had submitted or had published a total of 81 **publications** during the year 17 had submitted 63 peer reviewed journal articles and 14 had had a total of 40 peer reviewed articles published. 13 had submitted 22 peer-reviewed articles on their CIRCLE research and one CVF had had an article on their CIRCLE research published.
- 17/29 CVFs had been involved in a total of 44 **grant/funding applications**, 20 involving the home institution, 6 involving the host, 9 involving other CVFs and two involving the specialist advisor.
- 21 CVFs had been involved in 44 **collaborations**, 23 including home staff, 17 including host staff, 12 including home and host staff and 18 including external networks.
- 27 CVFs had attended 94 **conferences or events** in total and 21 CVFs had presented at 47 events and their CIRCLE research at 35 events.
- 22 CVFs had attended a total of 55 **training** events this year.

Institutional Strengthening Component

162. 22 institutions responded to a survey on institutional activities undertaken as a result of the ISP. Key findings are highlighted below:

- 14/22 have undertaken a review of mentoring provision at their institution
- 9 institutions have run workshops on mentoring in the last year
- 9 institutions have development policies/frameworks for mentoring as a result of CIRCLE input.
- 10 developing a new or strengthening an existing programme 11 institutions have introduced or adapted policies or strategies as a result of the ISP
- 17 institutions reported running training events as a result of the ISP.

163. In addition, at the workshop participants were asked to complete handouts on the successes achieved in their institutions in relation to the ISP. 41 handouts were received and the following areas were highlighted as areas of progress since and due to participation in CIRCLE:

- Mentoring (17) including: promotion and understanding of, formalising, introducing policies, training workshops, gaining management buy-in, handbook, institutionalisation
- ISP (9) including: increasing awareness and engagement university wide, moving forward with Action Plans, implementation and establishment
- Training related (6) including: induction programmes, policies around induction, researcher leadership training, advanced research methodology training, building a series of workshops, coordination of training
- RDF (4) including: training workshops, drawing up career development plans for specific researchers
- Supporting researchers to collaborate and gain funding (2)
- Reward and recognition for researchers (2)

Annex 10: List of People Interviewed

Table 12: List of people interviewed

Name	Home institution	Country	Role
DFID: Andrew Leslie, Andrew Shaw - teleconference	DFID		Donors
Association of Commonwealth Universities (ACU) (teleconference)	ACU	UK	Programme managers
Vitae meeting (teleconference)	Vitae	UK	Programme lead, ISP component
NRI meeting (teleconference)	NRI		Quality control component
AAS	AAS	Kenya	Programme management
Dr Hannah Karuri	Embu University College	Kenya	CVF Cohort 1
Dr Olawale Emmanuel Olayide	University of Ibadan	Nigeria	CVF Cohort 1
Dr Olanrewaju Olusoji Olujimi	Federal University of Agriculture	Nigeria	CVF Cohort 1
Mr Alex Zizinga	Makerere University	Uganda	CVF Cohort 1
Dr Philip Antwi-Agyei	Kwame Nkrumah University of Science and Technology	Ghana	CVF Cohort 1
Ms Olga Laiza Kupika	Chinhoyi University of Technology	Zimbabwe	CVF Cohort 1
Ms Catherine Mungai	International Livestock Research Institute	Kenya	CVF Cohort 1
Dr Mercy Derkyi	University of Energy and Natural Resources	Ghana	CVF Cohort 1

Name	Home institution	Country	Role
Dr Amos Kaboh-Bah	University of Energy and Natural Resources	Ghana	CVF Cohort 1
Dr Ogheneruona Endurance Diemuodeke	University of Port Harcourt	Nigeria	CVF Cohort 2
Dr Olushola Samuel Fadairo	University of Ibadan	Nigeria	CVF Cohort 2
Dr Oluwasinaayomi Faith Kasim	University of Ibadan	Nigeria	CVF Cohort 2
Dr Wondye Admasu Molla	Wollo University	Ethiopia	CVF Cohort 2
Dr Phyllis Bernice Opare	University of Energy and Natural Resources	Ghana	CVF Cohort 2
Dr Kolawole Adebayo	Federal University of Agriculture, Abeokuta	Nigeria	ISP Champion
Dr Richard Ameyaw Ampadu	STEPRI	Ghana	ISP Champion
Dr Mignonne Breier	University of CapeTown	South Africa	ISP Champion
Professor Simonyan Kayode Joshua	Michael Okpara University	Nigeria	ISP Champion
Professor Johnny Onyema Ogunji	Ebonyi State University	Nigeria	ISP Champion
Professor Philippa Chinyere Ojimelukwe	Michael Okpara University	Nigeria	ISP Champion
Dr Timothy Ipoola Olabiyi	Ladoke Akintola University of Technology	Nigeria	ISP Champion
Professor Professor Daniel Obeng-Ofori	University of Energy and Natural Resources	Ghana	ISP Champion
DFID - teleconference	DFID	UK	Discussion of preliminary findings

Annex 11: List of Home and Host Institutions

Table 13: List of host and home institutions

Institution	Country
Host Institutions	
University of South Africa	South Africa
University of Cape Town	South Africa
University of Ghana	Ghana
United Nations Environment Programme	Kenya
Organization for Social Science Research in Eastern and Southern Africa – OSSREA	Ethiopia
Addis Ababa University	Ethiopia
Home and Host Institutions	
International Livestock Research Institute	Kenya
Kwame Nkrumah University of Science and Technology	Ghana
Makerere University	Uganda
Muhimbili University of Health and Allied Sciences	Tanzania
Obafemi Awolowo University	Nigeria
University of Dar es Salaam	Tanzania
University of Ibadan	Nigeria
University of Nairobi	Kenya
Home institutions	
Chinhoyi University of Technology	Zimbabwe
Ebonyi State University	Nigeria
Embu University College	Kenya
Ethiopian Institute of Agricultural Research	Ethiopia
Federal University of Agriculture, Abeokuta	Nigeria
Hawassa University	Ethiopia
International Livestock Research Institute	Kenya
Kwame Nkrumah University of Science and Technology	Ghana
Ladoke Akintola University of Technology	Nigeria

Institution	Country
Makerere University	Uganda
Mekelle University	Ethiopia
Michael Okpara University of Agriculture	Nigeria
Muhimbili University of Health and Allied Sciences, Dar es Salaam	Tanzania
Obafemi Awolowo University	Nigeria
Science and Technology Policy Research, Institute of the Council for Scientific and Industrial Research	Ghana
University for Development Studies	Ghana
University of Dar es Salaam	Tanzania
University of Energy and Natural Resources	Ghana
University of Fort Hare	South Africa
University of Ibadan	Nigeria
University of Port Harcourt	Nigeria
Wollo University	Ethiopia