RSIF Capacity Building Strategy

RSIF Regional Coordination Unit
International Centre of Insect Physiology and Ecology (*icipe*), Nairobi, Kenya

17th September 2020

Abbreviations

ACE	Africa Centres of Excellence (ACE)
AHU	African Host University
ASET	Applied Sciences, Engineering and Technology
GRM	Grievance Redress Mechanisms
ICT	Information and Communications Technology
icipe	International Centre of Insect Physiology and Ecology
IP	Intellectual Property
IPI	International Partner Institution
OER	Open Educational Resource
LMS	Learning Management System
M&E	Monitoring and Evaluation
MOOC	Massive Open Online Course
PASET	Partnership for skills in Applied Sciences, Engineering and Technology
PASET-CAG	PASET Consultative Advisory Group
RSIF	Regional Scholarship and Innovation Fund
SSA	sub-Saharan Africa
TVET	Technical and Vocational Education and Training

1   Executive Summary

The Partnership for skills in Applied Sciences, Engineering and Technology (PASET) is a program which aims to address systemic gaps in skills and knowledge in sub-Saharan Africa's priority ASET fields, and to build the capacity of African education and training institutions to train high-quality technicians, engineers and scientists to meet the demands of the economy. Its flagship program is the Regional Scholarship and Innovation Fund (RSIF), which aims to support doctoral and post-doctoral training, research and innovation in five priority areas: ICTs (including big data and artificial intelligence); Food Security and Agribusiness; Minerals, Mining and Materials Engineering; Energy including Renewables; Climate Change. The RSIF program admits scholars into competitively selected RSIF African Host Universities (AHUs) in each of the five priority areas.

The goal of the RSIF Capacity Building Strategy is to outline a structured RSIF-wide program of training and other capacity building opportunities for RSIF PhD Scholars that (i) prepares them to undertake excellent PhD research for successful completion of the doctoral program, and (ii) enhances post-PhD employability and a successful career in academia, research and innovation. Training will also be available to PhD supervisors and other AHU faculty, to provide them with key skills in student supervision, research and grant management, IP, entrepreneurship, and other research and innovation-related skills. AHU libraries will also benefit from strengthened services and increased access to information resources.

The development of the RSIF Capacity Building Strategy was informed by the World Bank Project Appraisal Document (PAD) for the RSIF, the results of the October 2019 Scoping Study Workshop with AHUs, AHU questionnaires, and benchmarking of training programs from Europe and North America.

The Capacity Building Strategy focuses on three categories:
   i.   **Orientation Training**: All new RSIF PhD students will take a mandatory 6-day training, which will cover the RSIF Program; and introductory trainings on research ethics; sexual harassment; grievance redress mechanisms; PhD planning; proposal writing; information literacy; science communications; and data management, research methods and statistics. Courses will be delivered through live streaming, led by *icipe* and RSIF partners, with support from local tutors at each AHU.
   ii. **Cross-cutting Training Courses**: RSIF students, AHU supervisors and faculty will access a set of in-depth cross-cutting courses, including PhD supervision; sexual harassment and grievance redress mechanisms; information literacy and reference management; research methods and statistics, thesis defense training, scientific communication, science paper writing, grant proposal writing, entrepreneurship and IP, grant management, and research management and leadership. Courses will be delivered through taught courses (by online video streaming) and online learning through Open Educational Resources (OERs) and Massive Open Online Courses (MOOCs).
   iii. **Additional Capacity Building activities** will include support for international accreditation of PhD programs at AHUs; lectures from domain experts and other leaders; strengthening the services of AHU libraries and improving access to international journals; and provision of an online tool for AHUs to monitor student progress and quality of supervision.

The strategy includes 'training the trainers' to facilitate the integration of training into PhD and staff training curricula at AHUs. In addition, AHUs will be encouraged to form networks with partners to contribute to the development and delivery of training courses.

Training schedules, M&E plan and budget are also provided.

2 RSIF description

The Partnership for skills in Applied Sciences, Engineering and Technology (PASET) was launched in 2013 by the Governments of Senegal, Ethiopia and Rwanda with facilitation by the World Bank. It aims to address systemic gaps in skills and knowledge in sub-Saharan Africa's priority ASET fields, and to build the capacity of African education and training institutions to train high quality technicians, engineers and scientists to meet the demands of the economy. Since 2013, more than 25 African countries, as well as representatives of Brazil, China, India, Japan and Korea have participated in PASET's activities.

At the first PASET Forum in Dakar in 2014, PASET stakeholders unanimously adopted a Call to Action that outlined the following medium-term goals.

- Support training of at least 10,000 new PhD holders in ASET fields in sub-Saharan Africa (SSA).
- Establish an SSA-wide regional post-graduate scholarship program in ASET.
- Double the number of students in ASET programs in at least 10 countries in SSA.
- Support high quality ASET programs and centers of postgraduate studies and applied research in ASET disciplines in at least five additional universities in SSA.
- Develop at least five regional TVET centers of excellence in priority fields to train TVET faculty, enable resource sharing, quality assurance, and specialized training.
- Develop a regional quality assurance mechanism for ASET programs, benchmarked to comparable systems globally.
- Establish high quality data systems and benchmarking of ASET programs and institutions in at least 10 countries in SSA.

In 2015, PASET established the Regional Scholarship and Innovation Fund (RSIF), its flagship program, to support doctoral training and post-doctoral research and innovation in priority economic sectors for growth and development across SSA. These thematic areas are expected to have a far-reaching positive impact on society; priority areas are

- ICTs including big data and artificial intelligence
- Food security and agribusiness
- Minerals, mining and materials engineering
- Energy including renewables
- Climate change.

The RSIF operates in three windows:

1. PhD Training – with priority on women and existing faculty without a PhD
2. Research – Facilitating applied research
3. Innovation – Innovate for industry and/or supporting entrepreneurship

Incorporating global best practices including sandwich training programs and support of students throughout all phases of their academic careers, the RSIF aims to:

- Create a critical mass of highly skilled scientists and innovators, supporting the creation of 10,000 new PhDs in 10 years
- Build capacity in the region to support PhD holders in the journey to enter academia, industry or entrepreneurship

The PASET RSIF Factsheet (https://www.rsif-paset.org/wp-content/uploads/2016/11/RSIF-factsheet-2016_Sep2016_v2_web.pdf) outlines the following expected benefits from PhD training in sub-Saharan African universities:

> *PhD researchers are needed to develop new knowledge, products and processes that provide sustainable solutions. They are also needed to adapt existing technology and turn it into marketable goods and services. Countries like China, South Korea and Singapore, who invested*

heavily in science and technology in the 90's, are now reaping the economic dividends. Africa also needs to invest in highly skilled PhDs who will become quality faculty that can develop stronger ASET university programs relevant to its development. The availability of a suitable workforce is a key determinant of where businesses choose to locate. As the number of skilled workforce in the ASET fields rises, more businesses with an interest in these skills will spring up, creating new employment opportunities. Also, teachers in TVET institutions tend to be university graduates, so higher quality of graduates would positively influence the entire education pipeline.

2.1 RSIF PhD Program and training

- The PASET RSIF initiative is a competitive PhD scholarship program providing three to four years of training for citizens of SSA countries at RSIF African Host Universities (AHUs) including strategic 'sandwich' research training at a selected International Partner Institute (a university, research institute or private company) for 6-24 months.
- Currently, the available skills training for RSIF PhD students follows the structure of the training at each AHU. Currently there is no RSIF-wide structure for training/capacity building in place. This capacity building strategy is one step towards the development of a RSIF-wide program to give students, as well as AHU supervisors and faculty, the relevant skills for successful PhD research and academic career development.
- The goal of the RSIF Capacity Building for AHUs is to provide all RSIF PhD scholars with a rich set of training to help prepare them for their academic career, including excellent PhD research and successful completion of doctoral degrees.

3 Developing the Capacity Building Strategy

3.1 Information Gathering

3.1.1 **World Bank Project Appraisal Document (PAD)**

The PAD outlines the need for capacity building:

- One of the Project Development Objectives, Component 1 Subcomponent 1.3(i) states that the project should '*support RCU in the design and implementation of cross-cutting PhD courses, training courses and mentoring programs, including climate change and transformative technologies.*'
- One of the Project Intermediate Objectives states that the project should implement '*cross-cutting training courses/workshops for RSIF scholars and researchers'*. The indicator used is the number of courses or workshops on cross-cutting, interdisciplinary topics that are designed and operational and can be taken by RSIF scholars and researchers. "The workshops and courses will include topics such as transformative technologies, soft skills, responsible conduct of research (ethics), best practices in science communication and dissemination, peer reviewed publications and seminars, best practices in peer-reviewing scientific manuscripts, finding and using academic literature, grant proposal writing to apply for research grants, research planning and delivery, laboratory safety, and new research methods."
- Project Development Objectives, Component 1 - Subcomponent 1.3 also states that to improve the quality of PhD programs and of research conducted in AHUs the capacity building should include support for AHUs to seek international accreditation of PhD programs, and increase the access to scientific, technological and innovation journals.

3.1.2 Scoping Study Workshop

Questionnaires, interviews and the PASET RSIF scoping study workshop in October 2019, looked at the current status of training as part of PASET RSIF PhD programs. Comments on the current status were also received from the PASET Consultative Advisory Group (CAG).

Key results which emerged from the workshop were:

- Across the RSIF AHUs, there is no standardization in the PhD programs - and cross-cutting skills trainings are often provided to postgraduate students through on-the-job training with varying degrees of supervision. This is driven primarily by each AHU having its own practices and academic rules in place for PhD students, along with differing national requirements for awarding of degrees. A set of mandatory and standardized training should be offered to PhD students.
- There is currently no mandatory training in which RSIF scholars must undergo. This includes a lack of requirements for courses which are standard in other parts of the world including training on information literacy, presentation skills or research ethics. A standardized set of requirements should be included.
- Supervision varies widely in approach and format, even within AHUs. The AHUs perceives tremendous value in a more standard approach to supervision, with supervisory capacity developed through training courses and the application of an online student monitoring tool.
- RSIF PhD students should receive ethics training, especially on research ethics as well as on sexual harassment.
- RSIF PhD students should develop an understanding of intellectual property (IP) rights, regulations and how to maximize benefits to the researcher and the host institution of well-developed IP, which can be offered through training.
- RSIF PhD students should receive training on how to develop partnerships with industry, including for industry focused research.
- RSIF students should undertake cross-cutting courses, including those which focus on entrepreneurship or research commercialization.
- RSIF institutions should receive advice and training on how to pursue international accreditation of their programs.

3.1.3 Models and Benchmarks for Training

- Current approaches to Capacity Building in Europe and North America were used as benchmarks. The African Research University Alliance and the African Academy of Sciences' AESA RISE program are two Africa-based examples which have similarities with the RSIF program – further work would be needed to learn more about their training approaches.
- In Europe, the Organization for PhD Education in Biomedicine and Health Science in the European System (Orpheus) has developed 'Best practices in PhD training' http://www.orpheus-med.org/images/stories/documents/ORPHEUS%20Best%20Practices%20DOCUMENT%202016.pdf. The document is intended to be a reference for institutions in Europe (and globally) to improve PhD program quality in all fields, not only medical sciences. Key items relevant to the RSIF Capacity Building strategy emerging from the Orpheus document recommends that PhD programs should:
  o Be performed under structured supervision
  o Ensure that candidates have appropriate training in the rules concerning ethics and responsible conduct of research, research methodology and statistics
  o Include courses in transferable skills including presentations (oral, papers, posters), project management, grant applications, evaluation of scientific literature, supervision, and career development
  o Be structured with a clear time limit of 3-4 years.

- o Include documented activities not directly related to the project including courses, journal clubs, conferences, etc.
- o Include continuous and structured assessment of progress
- Barnet, Harris and Mulvany (2017)[1] compared best practices for doctoral training in Europe and North America and recommended that career development should be included as part of the PhD program.
- Bates *et al.* (2011)[2] study on strengthening African Universities' capacity for Doctoral Programmes made the following recommendations:
  - o "A formal skills development course should be provided that systematically covers the areas needed by doctoral students including writing for publication."
  - o "A regular programme of workshops on supervisory skills combined with opportunities for peer support and mentoring should be provided to faculty supervising doctoral research."
  - o "Progress and completion rates for students should be monitored closely."
  - o "Arrangements should be made for students to have access to an appropriate range of electronic resources through partner institutions in high-income countries or other alternative mechanisms, until local systems are adequate."

3.2 Target groups

The key target groups for training are (i) RSIF PhD students and (ii) RSIF Supervisors and other faculty at the AHUs, especially those in the department or ACE implementing the RSIF program at the AHU, (iii) university administrators and (iv) librarians.

3.2.1 RSIF PhD students

- RSIF PhD students are the first target group and their attendance for Year 1 Orientation Training and other training throughout the PhD program is to be made mandatory, considering the broad base of essential skills and knowledge imparted during this training.
- The number of students entering the RSIF program each year that will benefit from the capacity building program is given in the table below.

Year	Number of students entering the RSIF program each year
2018	15
2020	65
2021	116 *est.*
2022	200 *est.*
2023	200 *est.*
2024	200 *est.*
2025	200 *est.*

- RSIF Supervisors and other faculty at the AHUs are the second target group, benefiting from targeted courses supporting their academic, leadership and supervisory work.
- Administrators will benefit from support for international accreditation and training in research management. Librarians will benefit from targeted courses in information literacy and increased access to electronic resources.

[1] Barnet, Harris and Mulvany (2017) A comparison of best practices for doctoral training in Europe and North America. FEBS Open Bio, 7(10): 1444–1452. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5623696/
[2] Bates *et al.* (2011) Assessing and Strengthening African Universities' Capacity for Doctoral Programmes. Plos Medicine, 8 (9), e1001068. https://journals.plos.org/plosmedicine/article/file?id=10.1371/journal.pmed.1001068&type=printable

- It is assumed that the number of AHUs that will benefit from capacity building will increase from the current 11 AHUs to 15 AHUs by the end of 2020.

3.3 Role of RSIF partners

Partners will provide specific inputs to the Capacity Building process:

3.3.1 **AHUs**

- Best practices for PhD training within African universities will be used as guidelines for developing courses. A survey of AHUs will be conducted to determine the resources and skills they could provide in the implementation of the strategy.
- Supervisors and AHU faculty will take part in developing training courses, gain skills in training, and subsequently hold trainings at AHUs independently (i.e. training will become integrated into the university PhD and faculty training programs).
- Supervisors will guide students to develop and follow a training plan.
- Supervisors to support students in taking training as local trainers/experts.
- Provide financial support for training courses through in-kind contributions including use of training rooms, meals/refreshments and similar support.
- Delivery of expert seminars

3.3.2 **International Partner Institutions (IPIs) and other partners**

- Best practices for PhD training within IPI universities will be used as guidelines for developing courses. A survey of partners will be conducted to determine the resources they could provide in the implementation of the strategy.
- IPIs will support development and delivery of cross-cutting courses, Open Educational Resources and MOOCs.
- Delivery of expert seminars.

3.4 Medium-Term Goals

Taken together, the Capacity Building strategy for the RSIF has the following medium-term goals.

- Strengthen foundations for research and innovation by providing skills development in key cross cutting areas for PhD scholars and university supervisors and faculty.
- Upgrading the skills of university staff to offer effective support to students and producing new generations of of high-quality research students.
- Promote the implementation among AHU of good international practices in PhD training.
- Address lack of a systematic skills development programmes within the AHUs for either supervisors or students.
- Through a wide range of training and other opportunities, RSIF students, PhD supervisors and faculty benefit from improved research, project management and further non-research skills.
- Internationally, there is an increased emphasis on formal training and accountability of doctoral supervisors. The capacity building program will integrate (i) PhD supervisor training into supervisor professional development and (ii) complementary systems for supervisors to monitor student progress.
- AHUs and students will benefit from accessing new knowledge, especially though a RSIF seminar program and student seminar program.
- RSIF PhD Students are expected to acquire knowledge and skills that equip them to undertake PhD research and beyond, e.g. to undertake independent research or to take up employment in practice communities to exploit this knowledge.
- Improved research pipeline, process and products of research.

- Knock-on effects as RSIF PhD students go onto supervise future PhD students and support the creation of academics; and go on to raise funds for research and innovation projects after graduation.
- Generate a set of publicly accessible resources which can be repurposed at AHUs and ACEs or other PhD training institutions across Africa for training of non-RSIF PhD students, researchers and faculty.
- Increase the access to scientific, technological and innovation and other published materials RSIF researchers and PhD students.

4   Overview of the Capacity Building Program (RSIF Skills-Knowledge Platform)

4.1   RSIF PhD Scholar Year 1 Orientation Training

4.1.1   **Overview**

- A key part of the RSIF PhD program is mandatory RSIF Orientation Training for all new scholars.
- The aim of the Orientation Training is to facilitate the transition to the RSIF PhD program by introducing new students to the values and expectations of the program, to build a common set of skills across all RSIF scholars, and to establish a RSIF community.
- The training guides students on integrity in their research and as an academic and provides an introduction to key core skills to benefit new doctoral students (including science communications, PhD proposal writing, information literacy, and research methods and data analysis).
- Training will take place within 1-2 months of students starting their PhD program at AHUs.
- The orientation and all training materials will be in English and French.

4.1.2   **Orientation Training: development and delivery**

4.1.2.1   **Method**

- <u>Live streaming</u>. All RSIF students will receive six days of Orientation Training at their AHUs, centrally live streamed[3] from *icipe* and AHUs (see section 4.6 for more details on AHU tutor engagement).
- <u>Open Educational Resources (OERs)</u>: all training materials from the orientation will be posted onto the RSIF website for open access (see section 4.4.2 for more details on OERs).

4.1.2.2   **Development of Orientation course content**

- Initially, content will be centrally developed and delivered by *icipe*, building on existing *icipe* courses. Materials will be updated annually, based on course feedback from students, trainers and AHUs, as well as updates to the domain of training.
- After giving the first Orientation Training in June 2020 for Cohort 2 of RSIF PhD Scholars, RSIF partners, including AHUs and RSIF International Partner Institutes, will help to improve/update content and assist in delivering training.

4.1.3   **Orientation Training Program**

The Orientation Training program is 6 full days, comprising the following modules:

Training module	Duration	Delivery Mechanism
Overview of the RSIF PhD Program, including the role of the Regional Coordination Unit (RCU), the student scholarship contract, allowances	1 day	- Live streaming - Open educational resources

---

[3] During university closures resulting from the COVID-19 pandemic, training will be live streamed to individual students and local AHU tutors.

and budgets, reporting, training courses, sandwich placement and international partners, code of conduct, sexual harassment[4], Grievance Redress Mechanisms)		
Overview of the RSIF African Host Universities[5]	½ day	- Live streaming - Open educational resources
Strategies for a successful PhD, including research planning and working effectively with supervisors	½ day	- Live streaming - Open educational resources
Responsible conduct of research (research ethics and integrity)	½ day	- Live streaming - Open educational resources
Information literacy	½ day	- Live streaming - Open educational resources
Introduction to research methods and statistics, data analysis and management	2 days	- Live streaming - Open educational resources
Introduction to science communications, including science posters & presentations, PhD proposal writing and social media.	1 day	- Live streaming - Open educational resources

4.2   Cross-cutting training courses

4.2.1   **Overview**

- A series high-quality cross-cutting courses in key skills will be available annually to RSIF PhD students, RSIF supervisors and university faculty. Some courses will target librarians and administrators.
- Courses that each RSIF PhD student is required to take in any given year, will be based on a Training Needs Assessment developed annually by the students through discussion with their supervisors. A number of the courses, however, are mandatory for all scholars.
- Courses will be developed and delivered by *icipe*, partners and AHUs, with the aim of fully integrating training into AHU curricula.
- The courses aim to equip the students, supervisors, and faculty with the essential core skills that are relevant for successful research and professional development, for example, science paper and grant writing, communications, PhD supervision, research management and leadership, research integrity, information literacy, intellectual property and entrepreneurship, gender inclusivity, and M&E.
- Courses on science-paper writing and grant proposal writing have the goal of developing actual work in progress during the training course. This could take the form of having participants develop advanced drafts of their scientific paper or grant proposal.
- Several of the topics introduced during the Orientation will be given in more depth, e.g. research methods and statistics, information literacy, communications and writing.
- Materials will be updated annually, based on M&E course feedback from students, trainers and AHUs, as well as updates to the domain of training. Advice from the PASET CAG will also be sought to improve and update the training.
- The proposed courses will be delivered as instructor-taught courses, as Open Educational Resources and MOOCs. In future, and guided by M&E and consultations, the cross-cutting taught courses may evolve to become more blended, combining taught content with online self-paced activities.

---

[4] Delivered by the World Bank
[5] Delivered by AHUs

4.2.2 Course summaries

4.2.2.1 Supervisor training

This training aims to develop PhD supervisors to international standards across all AHUs. The training will prepare RSIF PhD supervisors, and RSIF PhD alumni who are beginning to supervise PhD students, for the role of supervisor and provide insight into the responsibilities of teaching and leadership of PhD students. Training will include how to manage different phases of the PhD and problems that might occur. Two courses will be available: an online self-paced training course for 'Training of Trainers', and subsequent 1-2 day training courses at each AHU led by newly trained supervisors.

4.2.2.2 Sexual harassment and GRM training

A 1-day training for university students and staff on how to avoid, recognize, or report sexual harassment in the workplace. Training will refer to sexual harassment policies in place, and existing training, at AHUs. Training on the RSIF Grievance Redress Mechanisms will instruct students and staff on how to use to the GRM instruments through which dispute resolution can be sought and provided.

4.2.2.3 Research methods and statistics, data analysis and data management.

This in-depth 5-day course will build on the 2-day training module in the Orientation Training, providing further essential skills in research methods, research design, and statistics, including choosing the correct statistical tests and statistical analysis, and how research data should be managed. RSIF PhD students will be encouraged to attend this course early in their first year to support proposal development.

4.2.2.4 Thesis defense training

This 1-day training course aims to prepare final year doctoral students for a confident and effective defense presentation and oral examination.

4.2.2.5 Science paper writing workshop

This workshop aims to provide scientists with skills to write research papers for publication in peer-reviewed journals. Using an early draft of their own manuscript, together with detailed step-by-step instructions on writing the various parts of research papers, trainees will develop an advanced draft of their manuscript during the workshop. This workshop will be highly interactive and hands-on, with substantial individual and group exercises.

4.2.2.6 Grant proposal writing workshop

This workshop aims to provide skills to researchers to overcome the key challenges faced when developing grant proposals. Training will include how to build and manage partnerships in collaborative projects. Wherever possible, training will focus on specific grant calls so that participants learn-by-doing to develop a draft of the proposal during the workshop. Workshops will be highly interactive and hands-on, with substantial individual and group exercises. Two courses will be held annually: (i) for RSIF PhD students, and (ii) for RSIF Network members.

4.2.2.7 Science communication training

This course will assist researchers develop and deliver effective science presentations and posters, to communicate to non-scientists, to make a memorable pitch, and understand the role of social media to positively influence science communication.

4.2.2.8 Information literacy training

for individual researchers and librarians on how to locate, evaluate, use and manage information effectively, with emphasis on e-resources.

4.2.2.9 Research management and leadership training course

This course aims to teach researchers who are new to management, and those with limited experience, the principles of ethics and compliance; research productivity and performance; the role of the research manager; research strategy and planning; project management; organization, structure and governance; academic leadership; promoting the research; publishing; risk management.

4.2.2.10 Intellectual property (IP) rights, regulations and how to maximize benefits to the researcher and the host institution

The course will guide PhD students, supervisors and AHU faculty on how innovative technologies can be used for scientific, socio-economic and commercial purposes, whilst protecting the rights of the university and encouraging the flow of ideas and inventions from university to the marketplace to benefit society.

4.2.2.11 Entrepreneurship and research commercialization

The course describes how to universities can become more entrepreneurial, create new enterprises, and build bridges between academia and industry (private-public partnerships) to commercialize new technologies.

4.2.2.12 Monitoring and Evaluation

This two day training serves as an introduction and a guide to students and researchers, primarily those involved continuously in RSIF research and innovations grant implementation and those aspiring to win grants, on how to monitor and evaluate projects and programmes in an effort to achieve objectives and also help beneficiary communities in improving their livelihoods.

4.2.2.13 Creating a gender-inclusive educational environment

This 2-3 day, live-streamed workshop will explore current structural social inequities within higher education in sub-Saharan Africa; raise awareness of the value of diversity in applied science, engineering, and technology fields; and engages PhD students and faculty as partners as they develop skills and action plans for gender-sensitive communications, curriculum development, teaching, mentoring, and supervision. Course learning outcomes will include: (i) increased awareness among participants of gender-based differences in learning styles, ways of conducting research, career preferences, and the support needed to succeed; (ii) skills for faculty to apply a gender lens when designing and delivering their teaching materials, in their supervisory interactions with students, and in language they use as educators; and (iii) empowering participants to work together to create a more inclusive educational and work environment at their institutions.

4.2.2.14 Understanding corruption in universities to promote academic integrity in the delivery of education services

This annual 1-day awareness training will be open to RSIF students & supervisors, AHU faculty and RSIF grant holders. Topics will include:

- Favouritism and nepotism in student admissions
- Diversion of university, research or scholarship funds
- Procurement fraud
- Academic dishonesty: plagiarism, essay mills, research misconduct, examination fraud, fake degrees
- Sexual exploitation
- AHU policies to promote academic integrity

4.2.3 Cross-cutting training courses: Program

Course/workshop	Delivery Mechanism	Course developed and delivered by	Duration Frequency Dates	Target Audiences	Training mandatory for
Supervising PhD students	Online self-paced course for Training of Trainers	Training service provider/Consultant	Approx. 2 months Annual Dates: starting March/April/May 2021 (Year 3)	Primary RSIF PhD supervisors; PhD alumni who are starting to supervise students	Online training will be mandatory for selected RSIF PhD supervisors representing each AHU
	Workshop at each AHU led by supervisors trained by the online course	AHU supervisors	1-2 days Annual Dates: TBD (from Q1 Year 4 - 2021)	Primary RSIF PhD supervisors; PhD alumni who are starting to supervise students	Workshop at AHUs will be mandatory for all primary RSIF PhD supervisors
Sexual harassment and Grievance Redress Mechanisms training	- Live streaming - Open educational resources	Consultant[6]	1 day Biannual Dates: Oct and March each year, starting 2020 (Year 3)	Supervisors, PhD students, faculty, RSIF AHU Coordinators, AHU GRM contact persons	Live streamed training will be mandatory for all primary RSIF PhD supervisors, RSIF PhD students, RSIF AHU coordinators
Information literacy for individual researchers and librarians (RSIF PhD students; AHU PhD student supervisors; AHU librarians)	- Live streaming - Open educational resources	*icipe* (RCU), international partners	2 days Biannual Dates: August and Feb each year, starting Aug 2020 (Year 3)	PhD students, AHU supervisors, interested faculty, librarians	Live streamed course will be mandatory for all 1st year RSIF PhD students
Research methods and statistics, data analysis and data management	- Live streaming - Open educational resources - MOOC	*icipe* (RCU), international partners	5 days Biannual Dates: Nov and May each year, starting Nov 2020 (Year 3)	1st year RSIF PhD students and students requiring a refresher course; PhD supervisors and other faculty	Live streamed training course will be mandatory for 1st year RSIF PhD students
Thesis defense training	- Live streaming - Open educational resources - MOOC	*icipe* (RCU), international partners	1 day Biannual Dates: July and Jan each year, starting July 2021 (Year 4)	Final year PhD students	Live streamed training course will be mandatory for final year RSIF PhD students
Science communication (including presentations, posters & pitching)	- Live streaming - Open educational resources - MOOC	*icipe*, international partners, AHUs	2 days Biannual Dates: Nov and May each year, starting Nov 2020 (Year 3)	RSIF PhD students; primary RSIF PhD supervisors; AHU faculty	Live streamed training course will be mandatory for 1st year RSIF PhD students

---

[6] The consultant will also consult the AHUs to determine if each has a Sexual Harassment and GRM policy and functioning system. If gaps are identified the consultant will make recommendations, which will be communicated by the RCU to the AHUs.

Course/workshop	Delivery Mechanism	Course developed and delivered by	Duration Frequency Dates	Target Audiences	Training mandatory for
Science paper writing	- Live streaming - Open educational resources - MOOC	Consultant, AHUs, international partners	5 days Annual Dates: Feb each year, starting 2021 (Q3, Year 3)	RSIF PhD students; primary RSIF PhD supervisors	RSIF PhD students who have prepared a draft of a research paper
Grant proposal writing	- Live streaming - Open educational resources - MOOC	Consultant, AHUs, international partners	5 days Annual from year 4 Dates: TBC	RSIF PhD students	RSIF PhD students
	- Live streaming - Open educational resources	Consultant	5 days Annual Dates: starting Nov 2021	AHU Network Members	Selected AHU Network Members
Research management and leadership	- Live streaming - Open educational resources - MOOC	Consultant, AHUs, international partners	4 days Annual Dates: April each year, starting 2021 [Q4, Year 3]	AHU RSIF Coordinators; RSIF Network Coordinators, RSIF Research and Innovation Grant holders; final year RSIF PhD students; primary RSIF PhD supervisors	• Live streamed course will be mandatory for all AHU RSIF Coordinators and RSIF Research and Innovation Grant holders. • When available, the MOOC will be mandatory to all final year RSIF PhD students and RSIF PhD supervisors.
Intellectual property rights, regulations and how to maximize benefits to the researcher and the host institution	- MOOC - Open educational resources	Consultant	Self-paced MOOC for 8-12 weeks Frequency: open Dates: from May 2021 [Q4, Year 3]	AHU IP officers; RSIF PhD students and their AHU supervisors; interested AHU faculty; RSIF Network Coordinators; RSIF Research and Innovation Grant holders	MOOC course will be mandatory for AHU IP officers, RSIF Network Coordinators, RSIF Research and Innovation Grant holders, RSIF PhD students
Entrepreneurship and research commercialization, including how to develop partnerships with industry	- Live streaming - Open educational resources	Consultant	3 days Annual Dates: TBC [starting Q3, Y3; 2021]	RSIF Research and Innovation Grant holders and their partners; RSIF PhD Students; RSIF PhD Supervisors; interested faculty	RSIF Research and Innovation Grant holders
RSIF Research and Innovation Grant management, including technical, financial and procurement reporting,	- Live streaming - Open educational resources	*Icipe* (RCU)	2 days Annual Dates: First course will be delivered upon signing of Project Grant Agreements (Oct	RSIF Research and Innovation Grant holders; and relevant AHU administrators	RSIF Research and Innovation Grant holders; and relevant AHU administrators

Course/workshop	Delivery Mechanism	Course developed and delivered by	Duration Frequency Dates	Target Audiences	Training mandatory for
research ethics, M&E (Orientation for Grant Holders)			2020 TBC) and thereafter when grants are awarded		
Monitoring and evaluation	- Live streaming - Open educational resources	*icipe* (RCU)	2 days Biannual Dates: September and March each year, starting September 2020 [Q2, Year 3]	2 courses (1) All students and interested faculty, (2) RSIF Grant Applicants; [A third course will be held for RSIF Grant holders as part of the RSIF Research and Innovation Grant management training]	Final year RSIF PhD students and RSIF Research and Innovation Grant holders
Creating a gender-inclusive educational environment workshop	- Live streaming - Open educational resources	Consultant	2 to 3 days Annual Dates: October each year, starting 2020 [Q2, Year 3]	RSIF PhD students and their AHU supervisors; RSIF AHU Coordinators; interested AHU faculty	Live streamed course will be mandatory for RSIF PhD scholars
Understanding corruption in universities to promote academic integrity in the delivery of education services	- Live streaming - Open educational resources	AHUs, *icipe* (RCU)	1 day Annual Dates: TBC, starting Year 3	RSIF PhD students & supervisors, AHU faculty and RSIF grant holders	RSIF PhD students

4.3 Additional Capacity Building Activities

Other capacity building activities include support for international accreditation of PhD programs, guest lectures and seminars, the development and application of a student progress monitoring tool, support for the creation and implementation of academic networks, online pedagogy, and strengthening the capacity of AHU libraries.

4.3.1 Support for AHUs with international accreditation of RSIF PhD programs

RCU-icipe will facilitate AHUs pursuing international accreditation to validate the quality of PhD programs and ensure overall compliance with international academic standards. This activity will entail (a) developing guidelines and useful linkages for self-evaluation and accreditation, and (b) monitoring progress towards accreditation.

I. The RCU will identify **key contact persons at AHUs** for accreditation/quality assurance of RSIF PhD programs, for monitoring and training purposes.

II. **AHUs-ACEs that have not begun the international accreditation process.** To help guide UGB and SU, i.e. ACEs that have not begun the accreditation process, but have funds available for the process, the RCU will compile accreditation experiences/information from (a) ACEs that have started or completed foreign accreditation, (b) the Inter-University Council for East Africa (IUCEA; https://ace2.iucea.org/) and the Association of African Universities (AAU; https://ace.aau.org/), the regional facilitation units for the ACE projects, which are familiar with accreditation processes, (c) Accreditation agencies that previously completed evaluation/accreditation of graduate programs within AHUs/ACEs. This information will be used to develop guidelines for AHUs on the best practices for international accreditation.

III. **AHUs-ACEs that have begun the international accreditation.** RCU will monitor the progress of NM-AIST, UoR, BUK, which have started international accreditation, and provide information/training to facilitate the process as necessary.

IV. **AHUs that are not ACEs.** Regarding KU, UoN and UoG, i.e. AHUs that have not begun the accreditation process, the RCU will not facilitate international accreditation by US or European accreditation agencies, the cost of which is prohibitive for these universities. Although there are no African regional accreditation agencies, the RCU will contribute to building local capacity for affordable and sustainable doctoral accreditation/quality assurance by exploring potential links with with South Africa's statutory quality assurance body for higher education, the Council on Higher Education (CHE; www.che.ac.za), which recently began a comprehensive quality assurance review of doctoral studies in South Africa. The RCU will also explore potential links with IUCEA, which has developed Standards and Guidelines for Postgraduate Studies in East Africa (https://iucea.org/mdocs-posts/standards-and-guidelines-for-postgraduate-studies-in-east-africa/). Although CHE does not have the capacity for accreditation of doctoral programs outside SA – at least not in the short-term, and IUCEA's mandate does not cover doctoral program accreditation, both organisations could help guide AHUs to establish internal quality assurance processes of PhD programs. Based on guidelines/information from CHE and IUCEA, the RCU will provide training to AHUs on self-evaluation for quality assurance of PhD programs.

V. **Accreditation of PhD studies in Francophone African Universities**. The RCU will also determine how doctoral programs are accredited in Francophone African universities to guide Francophone AHUs to sustainably maintain accreditation of PhD programs.

4.3.2 RSIF Guest Webinar Series

A series of seminars and inspirational talks by guest speakers drawn from academia, the private sector, policymakers and donors, to bring students and faculty into conversation with leaders in various fields. Subjects may include transformative technologies, climate change, entrepreneurship, partnerships, industry, career paths, policy engagement, grants, skills development and leadership. Presentations to increase awareness of

other internationally-supported PhD training programs in Africa to promote networking among PhD students will also be included. The schedule for the seminars will be published for the upcoming year and updated quarterly as schedules are revised. At least 12 guest seminars will be held annually. The delivery mechanism will be through online video conferencing. A moderator at each AHU will encourage RSIF scholars and faculty to attend the webinars from a communal location at each AHU, and facilitate questions being posed by chat, audio or video function. RSIF PhD students on sandwich placements at international partners will also be encouraged to attend.

4.3.3 RSIF PhD Student Webinar Series

A monthly forum for students to share and discuss their doctoral work with peers and faculty at AHUs and partner institutes. The series will help build students' presentation and critiquing skills. Organized by a committee of RSIF PhD students, the webinar series will create a RSIF student community and develop a sense of ownership of the RSIF PhD program among the students. All RSIF students and supervisors at AHUs and IPIs will be invited to attend.

4.3.4 PhD student management and monitoring system

An online tool will be developed by *icipe* for use by RSIF students and their supervisors to (i) record and track student progress and (ii) monitor the level and quality of engagement between students and supervisors. By providing rigorous, continuous monitoring of students and supervisors, this tool will contribute to improving the quality of PhD programs at AHUs.

4.3.5 RSIF Academic Networks

The *icipe* RCU will facilitate the creation and implementation of Academic Networks among RSIF AHUs and international and other partners to strengthen PhD programs, develop and deliver training, and undertake resource mobilization and collaborative research and innovation projects. Networks will be developed around specific thematic areas. Each network will be coordinated by a faculty member from one of the AHU network partners.

4.3.6 Mentorship program

A consultant will be hired in Year 3 to lead the design of a RSIF scholar mentorship program, including purpose, expected outcomes, matching methodology, mentoring methods, and monitoring and evaluation. The program aims to offer PhD scholars the support, advice and encouragement from mentors to follow a fulfilling and successful career in research, innovation, industry, business, policy, or consultancy sectors. The program also aims to take advantage of the experience and knowledge of experienced graduate students at the universities and IPIs who are able to share their experiences and challenges to new students.

4.3.7 Online pedagogy

A consultant with expertise in effective online pedagogy will be hired in Year 3 to support the design and transformation of *icipe* training materials for effective live-streamed training, online or blended learning courses as a way to increase flexibility in learning; as well as advise on MOOCs development. This will include 1-2 day training workshops for *icipe* and AHU course developers/trainers to design interactive live-streamed/online training courses.

4.3.8 Strengthening the capacity of AHU Libraries
    i. AHU knowledge sharing and library strengthening meetings.
        A biannual meeting with librarians from AHUs, *icipe* and international partners to share knowledge on (i) improving information services of academic libraries; (ii) regional and national library and information associations to increase access to e-resources., and (iii) developing links with other relevant institutions and organizations
    ii. Subscriptions to e-resources.

From Year 3, AHU libraries will be provided with RSIF funds to increase their access to high-quality e-journals and e-books through a subscription to a major ASET publisher, e.g. Elsevier, with a view to gaining perpetual access to select journal collections at no further cost after Year 4 when RSIF subscription support will end. A maximum of $24,000 will be available to each AHU, and AHU librarians will negotiate prices with publishers. In Years 3 and 4, RSIF will provide AHU libraries with funds for a subscription to MyLoft software to give off-campus access to library e-resources on a single platform. After year 4 an AHU library consortium will be created to cost share MyLoft subscription at a negotiated price.

iii. Support for publishing journal articles.

The *icipe* library will provide RSIF scholars and AHUs with updated lists of peer-reviewed journals with negotiated and waived Article Processing Charges (APCs) to facilitate publishing. The *icipe* library will also monitor publication metrics to determine impact of student and faculty articles and provide AHUs and students with awareness on free workshops and seminars on publishing in quality journals.

4.3.9   Program for Additional Capacity Building Activities

Description	Target audience	Timing	Delivery Mechanism	Facilitated by
International accreditation of PhD programs	Faculty members, department heads, university administration	2020 - 2022	Consultations, online discussions, webinars	*icipe*
Guest Webinar Series	RSIF students, PhD supervisors, AHU faculty	Monthly from Aug 2020 [Q1, Year 3]	Live-streaming	Webinars by experts from various organizations (AHUs, international partners, private sector, donors, policy makers)
RSIF PhD Student Webinar Series	RSIF PhD students and their supervisors, AHU faculty, partner institutes	Monthly from Sept 2020 [Q1, Year 3]	Live streaming	Meetings organized by RSIF PhD students. Webinars delivered by RSIF PhD students.
PhD student management and monitoring system and training	RSIF students and PhD supervisors (mandatory training)	Online tool completed Q3 Year 3 (2021) Annual training on the tool starting in Q3, Year 3 (2021)	Online tool, user manual, short trainings by live streaming	Consultant and *icipe*
Support the creation and implementation of academic networks	AHUs and partners	Ongoing	Online meetings, email	Facilitated by *icipe*
Mentorship program	RSIF PhD Scholars	To be determined	To be determined	Consultant
Online pedagogy	*icipe* trainers, AHU supervisors and faculty	To be determined (Year 3)	1-2 day training by live streaming	Consultant
Strengthening the capacity of AHU Libraries				
AHU knowledge sharing and library strengthening workshops for librarians	Librarians of AHUs, icipe and partners	2-day workshop held biannually, from Q2 Year 3 (October 2020)	Video conferencing	Librarians of AHUs, *icipe* and partners

Description	Target audience	Timing	Delivery Mechanism	Facilitated by
Subscriptions to e-resources	AHU libraries	From Q1 Year 3	Subscription to Science Direct, other journal databases, and MyLOFT software	*icipe*
Support for publishing journal articles	Students, PhD supervisors, faculty, libraries	Continuous	Email alerts, RSIF website	*icipe*

4.4 Course delivery methods

4.4.1 **Instructor taught courses: Live streaming**

- Live streaming, through a video conference platform, will ensure the capacity building is cost-sustainable and the course can reach all AHUs and RSIF students, including RSIF students on international sandwich placements.
- Training will be streamed from *icipe*, partner institutes, AHUs or training providers.
- Live streamed training will be designed to be highly interactive, to allow students to ask questions, engage in discussions and provide feedback.
- Live streaming will be conducted and managed through Zoom (or similar) or a Learning Management System (LMS).
- Live streamed training will be supplemented with local tutors coordinating and supporting classroom sessions at each AHU (section 4.6.1).

4.4.2 **Open Educational Resources (OERs)**

- Course materials will be publicly available as Open Educational Resources (OERs) on a LMS linked to the RSIF website.
- Course materials will include background information, course-plans, presentations, hand-outs, case studies, reading lists and exercises, and training guides. Email contact information of an expert person (instructor) for additional support or to respond to questions, will be provided. All materials will be made available in French and English.
- OERs will be a source of reference materials for students taking the taught courses, for students who may have missed any trainings, and others that would like to learn.
- AHUs and other universities can also use and adapt the materials to create courses for their own PhD programs and faculty training, thereby broadening the impact of RSIF capacity building.
- The advantage of OERs is that training materials can be downloaded when internet connection is good so that trainees can continue to study offline.
- A consultant with expertise in effective online pedagogy will be hired in Year 3 to support the design and transformation of *icipe* training materials to live-streamed training or blended learning courses and advise on which courses should be developed as MOOCs. This will include a 1-2 day training workshop for *icipe* and AHU course developers/trainers to design interactive live-streamed/online training courses.
- A second consultant will provide technical expertise in online LMS to support the selection, set up and testing of a suitable platform, uploading of training materials, and technical trouble shooting of online courses.

4.4.3 MOOCs (Massive Open Online Courses)

- MOOCs will be developed for most training courses (section 4.2.3) and will be based upon the Open Educational Resources developed for the courses. A consultant will be hired in Year 3 to develop and launch a MOOC for Intellectual property (IP). Additional MOOCs will be developed in subsequent years by consultants or through collaboration with international partners that have experience in developing digital learning content, e.g. Université Mohammed VI Polytechnique (UM6P), Morocco.
- MOOCs will contain several media to actively engage students and provide instruction, including reading content, presentations, videos, quizzes and exercises. Assessment of submitted quizzes and exercises will be achieved through an automated system in the LMS.
- MOOCs will provide unlimited participation, broadening the impact of RSIF capacity building by connecting to a wider, more diverse community of researchers and students. In addition to being stand-alone courses, MOOCs can also supplement and reinforce the training in the taught courses.
- RSIF PhD students who are unable to attend the taught courses will be able to enroll in MOOCs at any time. MOOCs have the added advantages that a student can take the course at their own pace.
- MOOCs will be designed to enable downloading of training materials, allowing students to continue to study offline when internet connectivity is poor.
- MOOCs will be publicly available on a LMS, linked to the RSIF website.
- MOOCs will be made available in French and English.

4.4.4 Language of training

- Live-streamed trainings will be delivered in English with French translations.
- All training materials, OERs and MOOCs will be available in English and French.

4.5 Local AHU set up for training

For live streamed training courses, each AHU will need to invest in a small amount of infrastructure, materials and personnel to assure quality training. Training facilities & support at AHUs should include:

- Training room with sufficient space for all trainees
- A robust internet connection: estimated 1 Mbit/s (receive) and 0.5 Mbit/s (send)
- Screen, projector, camera and audio (speaker/microphones)[7]
- Dedicated laptop computer
- Local IT support
- Printing of some course materials
- Refreshment facilities

4.6 Building capacity at AHUs to deliver cross-cutting training courses

A key activity will be to support AHUs to integrate cross cutting courses in PhD curricula and faculty training programs within 4 years. To facilitate integration, courses will be developed and delivered in partnership with local trainers. In addition, some courses will be developed and led by RSIF Networks.

---

[7] Video conferencing equipment for AHUs will be purchased by RSIF in Year 3

4.6.1 AHU contribution to development and delivery of training courses

Each of the taught courses will have at least one local tutor from each AHU assigned to each course. Local tutors will review and help develop course content with the course facilitator/lead trainer. Before each course, the local tutors will meet with the course facilitator to discuss the course content, expectations and learning outcomes, and their roles as a local tutor. Local tutors will provide local context to the training where necessary, encourage their students to engage in discussions, and ensure questions from students are adequately answered by the trainers. Local tutors will also help impart the values and expectations of the RSIF program and help establish a RSIF community at their AHU. Local tutors should be selected from young faculty members at each AHU that are able to commit to help build training continuity at their university.

This approach will create a cadre of experienced trainers at each AHU who will subsequently train students in specific subjects and continue to tune content towards local context and needs.

4.6.2 Partnerships between AHUs and IPIs to develop and deliver training courses

AHUs and IPIs will be encouraged, through Network agreements with AHUs, to develop capacity building collaborations for the development and delivery of RSIF training courses. Each Network could take responsibility for one particular training course from the RSIF cross-cutting course curriculum, e.g. Science Paper Writing, Science Communications, or Grant Proposal Writing. RSIF funds will be made available to facilitate and incentivise the development and delivery of the courses by RSIF Networks. This activity will build local capacity at AHUs for the cross-cutting courses in addition to strengthening the networks.

4.6.3 Training materials

All training materials will be available as Open Educational Resources (OERs) (section 4.4.2) on an LMS linked to the RSIF website. Materials will include background information, course-plans, presentations, hand-outs, case studies, reading lists and exercises, and training manuals for trainers. All materials will be made available in French and English.

4.7 Monitoring and Evaluation

A series of monitoring and evaluation tools will be developed to determine the relevance and effectiveness of training, on whether training goals and learning outcomes were achieved, and to guide changes or improvements to the trainings based on experiences and feedback received. Monitoring will be implemented through an online survey platform and LMS.

M&E tools will include:

- **Assessing student learning.** A brief test administered immediately before and after training will determine the level of learning that has taken place. The results will be made available to both the trainee as well as the administering unit.
- **Assessing the participants' perception of the training: the post training evaluation survey.** Participant feedback will help to identify which activities were most useful, how well did the trainees enjoy the session(s)/course, the extent to which expectations were met, how training could be improved, and help measure overall training effectiveness. The survey will include specific questions on content, delivery, duration, course effectiveness, quality of trainers, overall learning experience and technical issues, and gender inclusiveness.
- **Assessing the application of new knowledge/skills in the workplace: The Participants Action Plan Approach (PAPA).** PAPA collects information about participants' use of the new knowledge/skills in the workplace. Participants commit themselves to action through the PAPA workplan developed during the training. A follow up questionnaire by the organizer/trainers will occur at a scheduled time

after the training, requesting information on which of the planned activities were implemented, and what other new activities were done as a result of attending the training. Participants will also be asked what effect new knowledge/skills have had on the work environment, and what problems, if any, were encountered implementing new knowledge/skills.

- **Assessing the course implementation from expert trainer perspective.** A report by trainers will assess their perception on, for example, their own level of preparedness for the training, relevance and level of the training content, whether all sessions were covered adequately, whether the participants engaged adequately in the training, what they (the trainers) learned from delivering/leading the training, and what would they do differently next time.
- **Final evaluation reports** will synthesize the assessment reports and surveys into a final training course report with recommendations for modifying/improving the courses.
- **Annual AHU survey of RSIF Capacity Building** will assess the effectiveness and relevance of training in improving the quality of PhD programs and research and innovation at AHUs, and the progress made by AHUs towards integrating the training in their own PhD programs. The survey will also capture recommendations for changes to the training curricula.

Summary of M&E tools

Tool	Purpose	Completed by	Phase
Preliminary test on competences of participants	To clearly identify participants' level of knowledge (and preparation level if required)	Participants	At start of training
Course attendance	To monitor attendance of courses by participants	Organizer	During training
Evaluation questionnaire	To collect data on the participants' perception of the course structure and content, method and quality of training, quality of trainers and usefulness/usability of acquired competences.	Participants	At end of training
Final test on competences of participants	To assess the level of knowledge of participants at the end of the training course.	Participants	At end of training
Trainers' reports	To assess the course implementation from an expert trainer perspective.	Trainers	At end of training
Participant Action Plan Approach (PAPA)	An exercise designed to help participants apply acquired competences into the work environment.	Participants	During training
Participant Action Plan Report	To assess the level of applicability of knowledge and competences acquired into the work environment.	Participants	Several months after training
Final evaluation reports	To communicate achieved objectives. To propose and justify modifications or improvements to the training programs.	Organizer and trainers	After collating all reports
AHU survey of training	To assess the effectiveness and relevance of training in improving the quality of PhD programs, research and innovation at AHUs; and ability of AHU to integrate training into their own programs	AHU RSIF Coordinator	Annually

4.8   Budget

The total cost of implementing the capacity building strategy over Years 2-6 is USD 695,000. This does not include costs of training on Intellectual property (IP) rights, Entrepreneurship and research commercialization, and RSIF Research and Innovation Grant management, which will be funded through Window 3 of the RSIF.

	Year						
	2 (2019-2020)	**3** (2020-2021)	**4** (2021-2022)	**5** (2022-2023)	**6** (2023-2024)	**Total**	
Item	**USD**	**USD**	**USD**	**USD**	**USD**	**USD**	**Comments**
ORIENTATION TRAINING	0	0	0	0	0	0	Delivered by *icipe* and AHUs
CROSS-CUTTING TRAINING COURSES							
PhD Supervisor training	0	23,000	23,000	23,000	23,000	92,000	Delivered by training services provider and AHUs
Sexual harassment and [a]Grievance Redress Mechanisms	0	5,000	5,000	5,000	5,000	20,000	Delivered by consultant
Information literacy for individual researchers	0	0	0	0	0	0	Delivered by *icipe*, AHUs and partners
Research methods and statistics, data analysis and data management	0	0	0	0	0	0	Delivered by *icipe*, AHUs and partners
Thesis defense training	0	0	0	0	0	0	Delivered by icipe, AHUs and partners
Science communication	0	0	0	0	0	0	Delivered by *icipe* and AHUs
Research management and leadership	0	12,000	12,000	12,000	12,000	48,000	Delivered by consultant or AHUs and partners
Intellectual property (IP) rights							Funded through Windows 2 and 3
Entrepreneurship and research commercialization							
RSIF Research and Innovation Grant management							
Science-paper writing	0	12,000	12,000	12,000	12,000	48,000	Delivered by consultant or AHUs and partners
Grant proposal writing	0	0	12,000	12,000	12,000	36,000	Delivered by consultant or AHUs and partners
Gender-inclusivity training	0	5,000	5,000	5,000	5,000	20,000	Consultant
Monitoring and evaluation	0	0	0	0	0	0	Delivered by *icipe*
						264,000	**sub-total**
Additional Capacity Building Activities							
International accreditation of PhD programs	0	7,500	7,500	0	0	15,000	Travel, training
Guest seminar series	0	0	0	0	0	0	Organized by *icipe*
RSIF student seminar series	0	0	0	0	0	0	Organized by RSIF students

Item	Year 2 (2019-2020) USD	3 (2020-2021) USD	4 (2021-2022) USD	5 (2022-2023) USD	6 (2023-2024) USD	Total USD	Comments
Increased access to subscribed e-resources	0	285,500	0	0	0	285,500	Subscriptions to ASET journal databases and MyLOFT
						300,500	**sub-total**
Other costs							
Translation and interpretation services	5,500	25,000	25,000	25,000	25,000	105,500	Translation service
Consultant (online pedagogy)		10,000				10,000	
Consultant (MOOC development)		5,000				5,000	
Consultant (LMS expert)		10,000				10,000	
						130,500	**sub-total**
						695,000	**Grand total**

5 Mitigation of impact of COVID-19 on higher education

Supporting AHUs and other African Universities through online educational platforms, applications and resources: Most African universities, including all AHUs, closed in March/April 2020 to contain the spread of the COVID-19 virus pandemic. Universities are seeking ways to minimize learning disruption by transitioning from campus to remote learning. Advanced educational institutes, including RSIF International Partner Institutes (IPIs), are offering support to African universities to roll out remote learning.

- *icipe* will "package" these educational applications, platforms, resources and key contacts to make them readily accessible through a single, searchable online portal on the RSIF website.
- *icipe* will promote these opportunities with AHUs, and link AHUs with key persons at the IPIs and other partners for training on the resources.
- *icipe* will seek additional educational applications, platforms and resources that can be used and adapted by African Universities for remote learning.
- Online course websites will also be surveyed to identify the best possible offerings of value to African universities, e.g. courses on edX, FutureLearn, Coursera, Google and UNESCO.

6 Conclusion

In summary, the RSIF Capacity Building strategy provides an overview of the plan for upgrading skills of RSIF PhD students, PhD supervisors and AHUs, and for integrating the training into PhD and faculty training curricula. The strategy builds on targets set by the World Bank PAD, the Scoping Study workshop, comments from the PASET CAG and benchmarking of best practices from Europe and North America. Training through the three phases (Orientation Training, Annual Cross-cutting Training Courses and Additional Capacity Building Activities) should result in higher quality preparation of RSIF PhD students in their journey to become successful independent researchers, and this is expected to have knock-on effects as RSIF students go onto supervise the next generations of PhD students. The strategy remains a living document and will be updated as work progresses.