

The PASET-Regional Scholarship and Innovation Fund for Applied Sciences, Engineering and Technology in Benin





Rsif in Benin



Research. Innovate. Transform Africa

Rsif - Designed for Impact

Flagship project of PASET



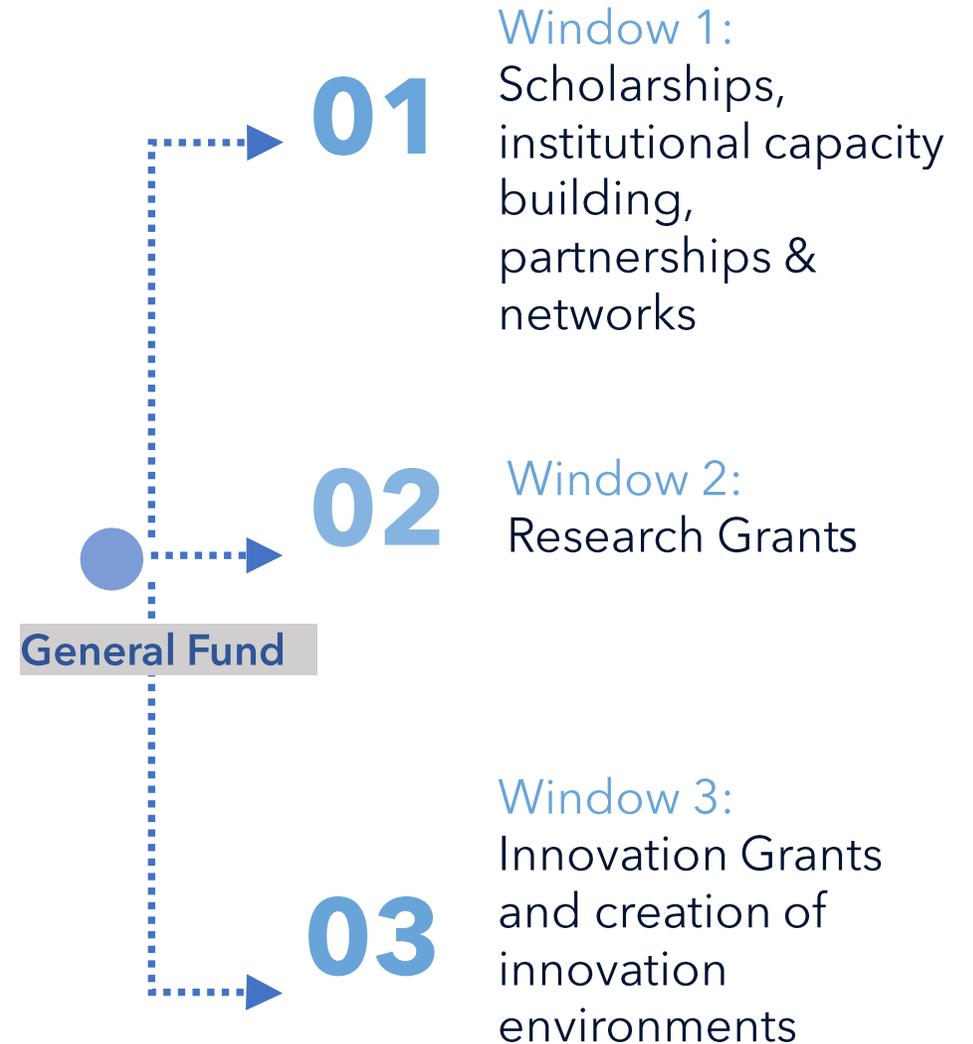
Building sustainable doctoral training, research and innovation ecosystems for development in Africa

Objectives

— Create a stock of highly skilled scientists, professionals and innovators in applied sciences, engineering and technology (ASET) areas

— Address imbalances in the number of women and disadvantaged groups in ASET fields in Africa

— Build African university capacity to provide relevant ASET training

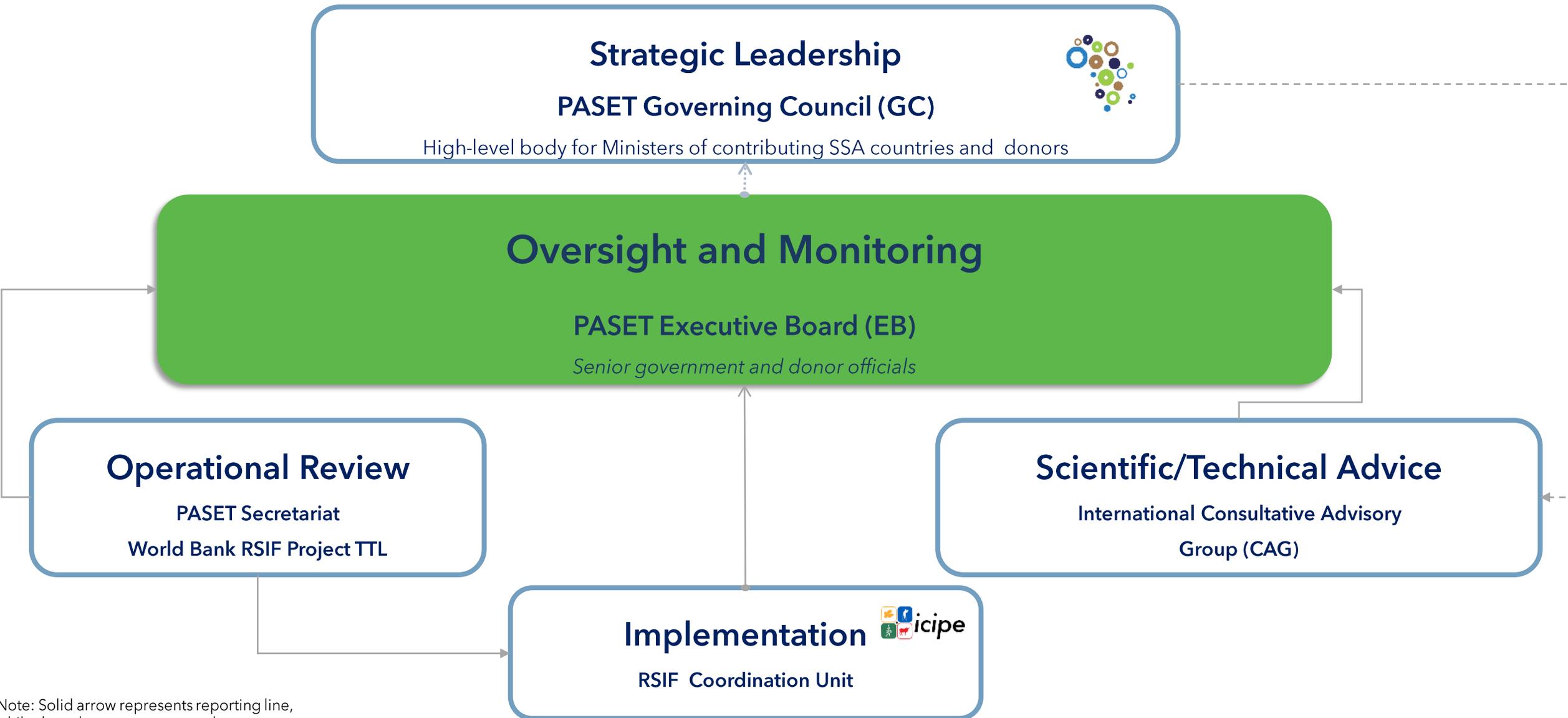


Rsif is a unique African initiative

1. Owned and managed by African governments through PASET (11 African governments)
2. To-date, investments from 9 African governments (between US\$1 -6 million each), the World Bank, Korea and other funders
3. Managed by an African led international research/innovation and training institution - *icipe*
4. Regional approach to grow Africa's STI agenda
5. Sustainability - vision to grow Rsif into a Pan-African science fund
 - establish a Permanent fund
 - exploring innovative financing and leveraging of private capital, e.g. blockchain technology, carbon credit, venture capital fund.



Inclusive, Efficient and Transparent Governance



Note: Solid arrow represents reporting line, while dotted arrow represents close working relationship

icipe Rsif - Fostering Excellence

- Highly Competitive Selection
- Ongoing Mentoring

- Selective Matching
- High Level of Interaction



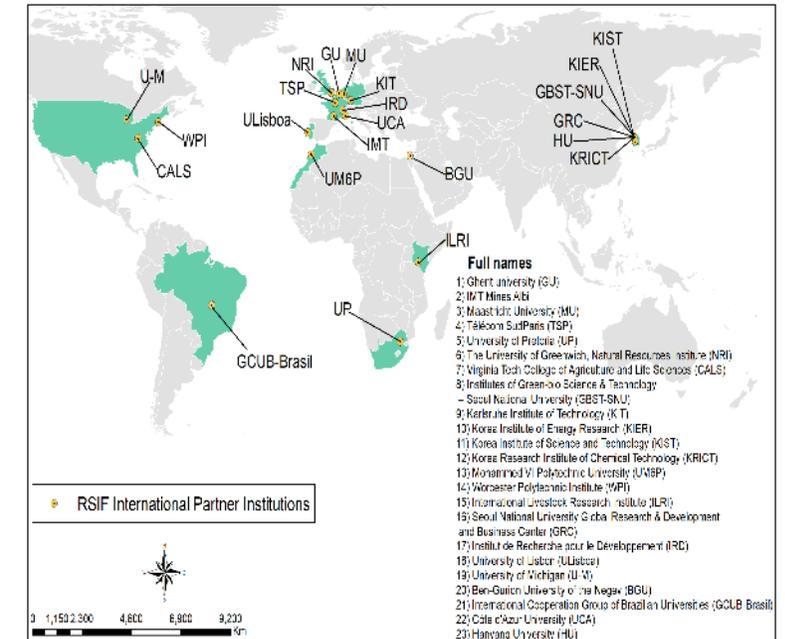
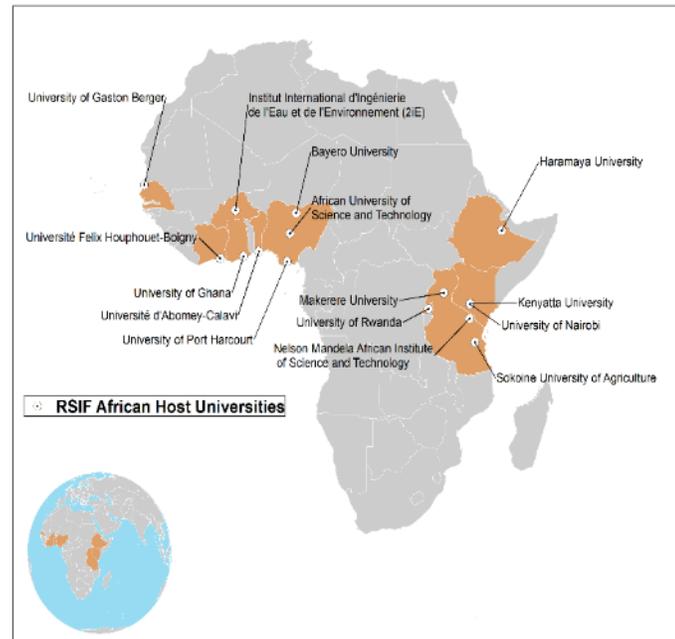
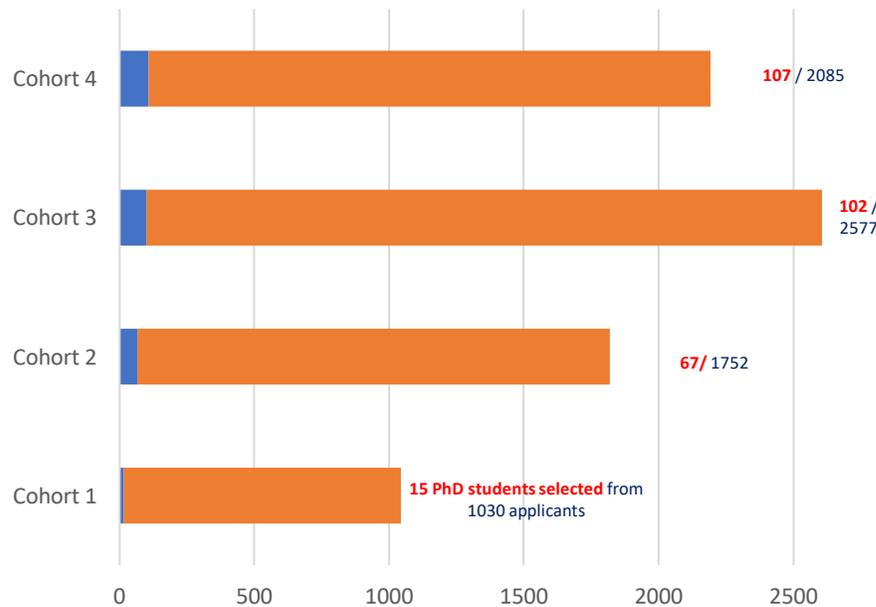
291 PhD Scholarships



15 African Host Universities
(4 AHUs admit first Rsif students in 2022)



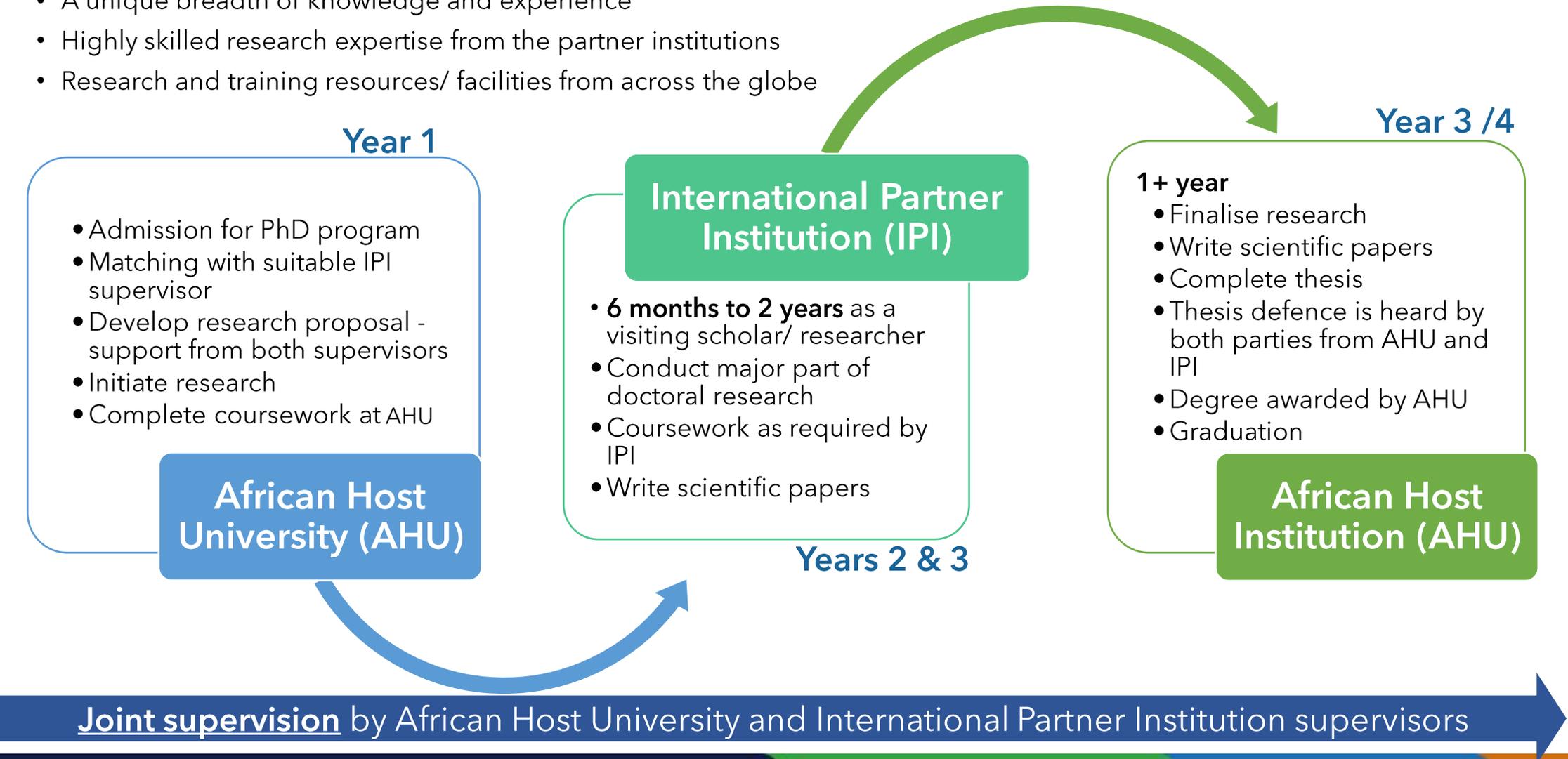
23 International Partner Institutes/universities



Rsif PhD Sandwich Model

Enables scholars and faculty members access to:

- A unique breadth of knowledge and experience
- Highly skilled research expertise from the partner institutions
- Research and training resources/ facilities from across the globe



Rsif and Benin



Photo: Hon. Minister Prof. Eléonore YAYI LADEKAN at the PASET meetings in Kigali, Rwanda, Feb-2023

Benin is a member of PASET

- The Hon. Minister of Higher Education and Scientific Research participates in the Governing Council and Mr. Dègla Hyacinthe Hessou, MESRS in the Executive Board

Investments in RSIF in pursuit of common agenda

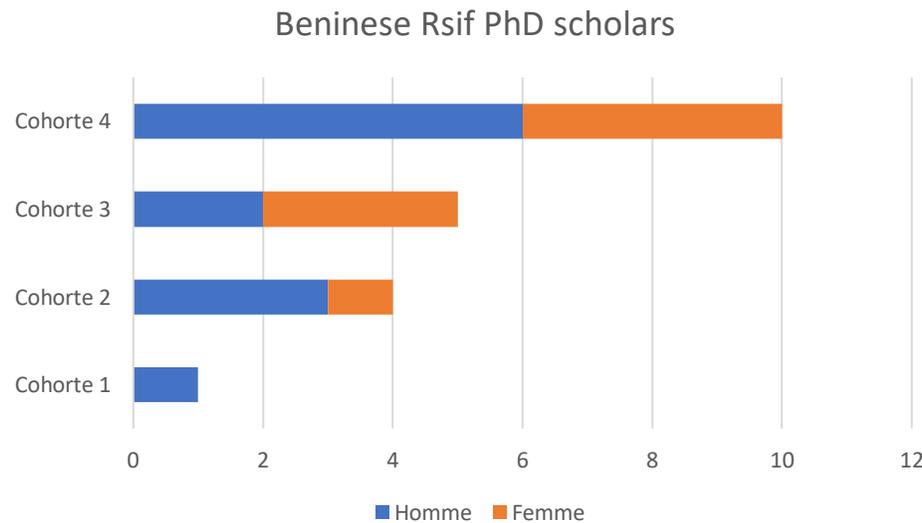
- supporting the building of international level PhD programmes anchored within African universities (i.e. UAC)
- accelerating high quality PhD training
- strengthening capacity for innovative research and respond to African challenges

Significant benefits to Benin: Benin made contribution of USD 2 million to RSIF in 2021

Beninese Rsif PhD Students Overview



- 20 Beninese Rsif doctoral scholars (40% women). 1 Rsif alumnus.
- Scholars registered under 5 thematic areas in nine African Host Universities (reduced “in-breeding”)
- 7 publications to date



Thematic Area	African Host University	Beninese Scholars
Climate Change	Université Félix Houphouët-Boigny, Côte d'Ivoire	4
	Haramaya University, Ethiopia	1
ICTs including Big Data & Artificial Intelligence	Université d'Abomey-Calavi, Benin	5
	University of Gaston Berger, Senegal	2
Minerals, Mining and Materials Engineering	African University of Science and Technology, Nigeria	1
Food Security and Agribusiness	Sokoine University of Agriculture, Tanzania	3
	University of Ghana, Ghana	1
	Makerere University, Uganda	1
Energy including renewables	Institut International d'Ingénierie de l'Eau et de l'Environnement (2iE), Burkina Faso	2

Emerging Impact: First Rsif Graduate to return home



Dr. Fréjus Ariel Kpédétin SODEDJI, Benin
Rsif Cohort 1 alumnus

Research theme: Genomics and plant breeding
5 publications in the period

Research adds value to cowpea towards enhancing food system; e.g. genetic diversity of cowpea germplasm from different origins; variation of micronutrient content in cowpea sprouts; as well as strategies to increase them.

Graduated from Université Félix Houphouët-Boigny (UFHB), Côte d'Ivoire in 2022.

Completed international research placements at Korea Institution of Science and Technology (KIST), Korea

- Founding member of the Rsif Alumni network
- Training next generation of science leaders. Solving critical problems.
- Eligible for Rsif Junior Investigator Research Award

Building Benin's Research and Training Ecosystem: Beninese national Rsif PhD Students (20) Status

Cohort 1

- 1 scholar completed and graduated
- 5 journal publications

Cohort 2

- 2 scholars on international research placement
- 2 scholars at AHU and collecting data in the field

Cohort 3

- 5 scholars at their respective AHUs and collecting data in the field
- Scholars to start their international research placements

Cohort 4

- 10 scholars have reported to their AHU, in first year of study



Photos: Exhibition at the 5th PASET forum in 2019.

Dr. Frejus Ariel Kpedetin Sodedji, Rsif cohort 1 scholar is the first Beninese graduate to return home (2022).

Beninese Rsif PhD Students Status (Cohort 1 & 2)

No	Name of Student	Gender	Rsif African Host University	PhD Research Project Title	Status	International Partner Institution
1	Dr. Frejus Ariel Kpedetin Sodedji	Male	University Felix Houphouët-Boigny, Côte d'Ivoire	Genetic diversity and optimization for increased carotenoids biosynthesis in cowpea [<i>Vigna unguiculata</i> (L.) walp]	Graduated 5 publications Samsung Dream Foundation Scholar	Korea Institute of Science and Technology (KIST), Korea
Cohort 2 (2020)						
2	Rogia Saïdath Adéline Gomez	Female	Sokoine University of Agriculture, Tanzania	Biosecurity in poultry farms and its effects on productivity and meat quality	At SUA, Tanzania	To be confirmed
3	Goudjo Habib Toessi	Male	University Felix Houphouët-Boigny, Côte d'Ivoire	Epidemiology of citrus fungal diseases in the context of climate variability in Benin	At UFHB, Côte d'Ivoire	University Mohammed VI Polytechnique (UM6P), Morocco
4	Jean-Fabrice Akouemaho Dominique Adanve	Male	University Felix Houphouët-Boigny, Côte d'Ivoire	Impact of climate variability on the interaction of soil and major diseases occurrence in rice agroecosystems in Côte d'Ivoire	At UFHB, Côte d'Ivoire	University of Pretoria, South Africa
5	Gerard Kponhinto	Male	University of Gaston Berger, Senegal	Collection and transmission of data over the Internet of Things	At UGB, Senegal	Seoul National University Global Research & Development and Business Center (GRC), Korea

Beninese Rsif PhD Students Status (Cohort 3)

No	Name of Student	Gender	RSIF African Host University	PhD Research Project Title	Status	International Partner Institution
6	Gbetoglo Charles Komadja	Male	African University of Science and Technology (Nigeria)	Engineering rock blasting in surface mining for maximum production and minimization of damages to surrounding environment.	At AUST, Nigeria 2 publications	Virginia Tech, USA
7	Gwladys Gloria Amen Ahouanse	Female	Sokoine University of Agriculture (Tanzania)	Assessment of the sanitary quality of bushmeat consumed in Africa in the case of southern Benin and molecular characterization of antibiotic-resistant Salmonella	At SUA, Tanzania	Universidade Estadual de Mato Grosso do Sul (UEMS)
8	Mahugnon Santoze Adido	Male	Sokoine University of Agriculture (Tanzania)	Identification of genetic markers (genes and gene networks) underpinning resistance to gastrointestinal nematodes in cattle	At SUA, Tanzania	Ben-Gurion University of the Negev, Israel
9	Isabelle Erhudice Tachégnon Tokannou	Female	Université Félix Houphouët-Boigny (Côte d'Ivoire)	Impact of climate change and land use on in situ conservation of Colas Nitida (Vent.) and development of technical itinerary for the sustainable production of the species in Benin	At UFHB, Côte d'Ivoire	Universidade Federal do Paraná (UFPR) (to be confirmed)
10	Jemima Alla Houessou	Female	University of Ghana (Ghana)	Economic Analysis of Orange Fleshed Sweet Potato (OFSP) Value Chain in Benin	At UG, Ghana	Virginia Tech, USA

Beninese Rsif PhD Students - Cohort 4 - in first year of study

No	Name of Student	Gender	Rsif African Host University	PhD Research Project Title	Status	International partner institution
11	JESUGNON ESTHER ALDEGONDE KPODO	Female	Haramaya University, Ethiopia	Nature-based solutions in agricultural sector: what's gender got to do with it?	At HU, Ethiopia	To be confirmed
12	Adanyro ATILAGO	Male	2iE, Burkina Faso	Design and Characterization of a Biogas Valorization System by Generator Hybridization: Techno-economic study of its adoption by rural communities in Africa	At 2iE, Burkina Faso	"
13	Lere Mitterand DEGUENON	Male	2iE, Burkina Faso	Sizing by technical and economic optimization of a hybrid off-grid PVEolar energy production system	At 2iE, Burkina Faso	"
14	Mahoussi Kadoukpe Arnaud DJANTA	Male	Makerere University, Uganda	Development of iron & zinc improved vegetable soybean [Glycine max (L.) merr] cultivars with consideration of agronomic traits	At MUK, Uganda	"
15	Merveille Santi Kpêchéhoué Zinsou	Female	University of Gaston Berger, Senegal	Diagnosis of black skin diseases from images using machine learning	At UGB, Senegal	"
16	Dèdjro Fortuné Kponou	Male	Université d'Abomey- Calavi, Benin	English-Fon Neural Machine Translation	At UAC, Benin	"
17	Hermione Fleurette W. DENAKPO	Female	Université d'Abomey- Calavi, Benin	Prediction of the occurrence of leaks in water distribution networks using machine learning	At UAC, Benin	"
18	MARIANNE ALFREDINE OMONLOLA BALOGOUN	Female	Université d'Abomey- Calavi, Benin	Integration of Machine Learning and Constraint Programming to solve constraint satisfaction and combinatorial optimization problems.	At UAC, Benin	"
19	Sabi Bruno BIO NIKKI SARE	Male	Université d'Abomey- Calavi, Benin	Machine learning for agriculture: Application to the automatic and early detection of the Fall armyworm in Africa.	At UAC, Benin	"
20	Sidoine ODE	Male	Université d'Abomey- Calavi, Benin	Power consumption reduction using TinyML	At UAC, Benin	"

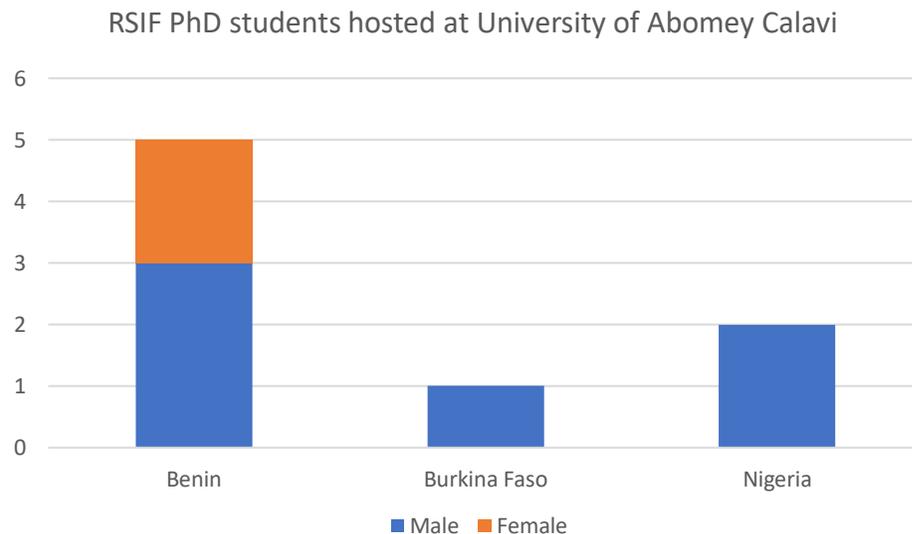
Benefits to Beninese Institutions



Research. Innovate. Transform Africa

Benefits for Université Abomey-Calavi (UAC) an Rsif African host university

- PhD programme in Information technologies and communication at Institute of Mathematics and Physical Sciences, [Centre d'Excellence des Sciences Mathématiques, Informatique et Applications \(SMIA\)](#).
- 8 Rsif PhD students – cohort 4 (25% women) from three countries.



Research themes:

Machine learning & deep learning
Automatic speech recognition
Speech to speech, speech to text etc.
Computer vision–ML in agriculture

Eight Rsif funded PhD students at UAC, Benin - in first year of study (2022)

No	Name	Nationality	Gender	Research topic	Status	International Partner Institution
1	Dèdjro Fortuné Kponou	Benin	Male	English-Fon Neural Machine Translation	At UAC	To be confirmed
2	Hermione Fleurette W. DENAKPO	Benin	Female	Prediction of the occurrence of leaks in water distribution networks using machine learning	At UAC	“
3	Marianne Alfredine Omonlola BALOGOUN	Benin	Female	Integration of Machine Learning and Constraint Programming to solve constraint satisfaction and combinatorial optimization problems.	At UAC	“
4	Sabi Bruno BIO NIKKI SARE	Benin	Male	Machine learning for agriculture: Application to the automatic and early detection of the Fall armyworm in Africa.	At UAC	“
5	Sidoine ODE	Benin	Male	Power consumption reduction using TinyML	At UAC	“
6	Theodore NIKIEMA	Burkina Faso	Male	Proposal of a mobile application for data collection under CSPro for the monitoring and evaluation of agro-ecological farms in Burkina Faso	At UAC	“
7	Daniel Dzarma Ezra	Nigeria	Male	Operational risk optimization in agricultural supply chains		“
8	Ismaeel Abiodun Sikiru	Nigeria	Male	Securing communication information in transit network systems using Machine Learning algorithm		“

Strengthening Research Networks for UAC

- 23 potential International Partner Institutions (IPIs) to sign agreements and exchange staff and students with UAC
- UAC participated at the Rsif 2022 conference at University Mohammed VI Polytechnic in Morocco.
- Beninese graduates and universities are eligible to apply for Rsif Research and Innovation grants.

Accelerating Inclusive Green Growth through Agri-based Digital Innovation (AGriDI)



The AGriDI project is led by the International Centre for Insect Physiology and Ecology (*icipe*) and its consortium partners, the University of Abomey Calavi (Benin), Agropolis Foundation (France) and Gearbox Pan African Network (Kenya).

Financed by the European Union through the ACP Innovation Fund of the Organization of African, Caribbean and Pacific States (OACPS)

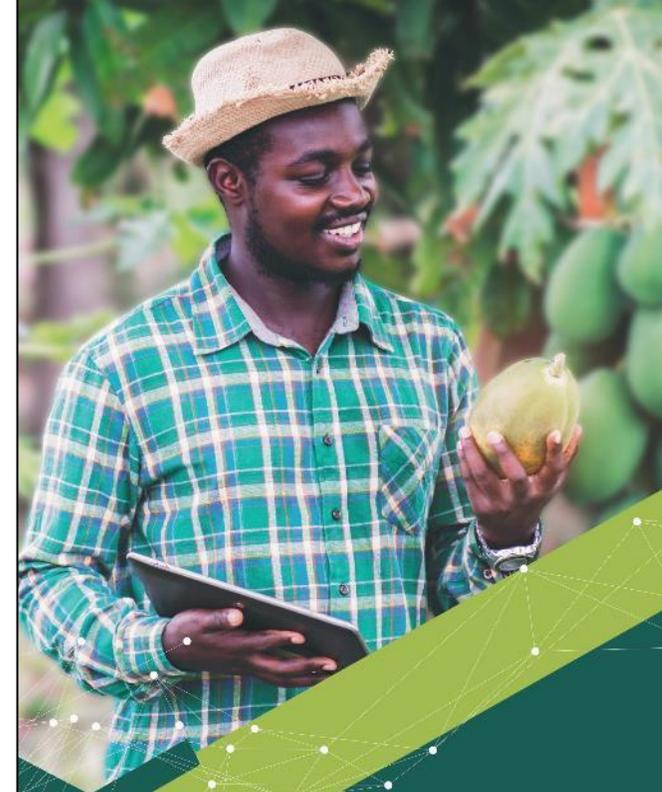
Three AGriDI innovation projects are under implementation in Benin with total value of more than USD 700,000

1. A digital solution for more effective and efficient agro-ecological management of the Fall Armyworm in northern Benin - University of Parakou
2. Boosting rice and maize supply chains through innovative e-market and financial services to smallholder farmers in Benin - African Green Corporation SA
3. Strengthening the political and regulatory environment for the development and scaling up of digital innovations in the agricultural sector in Benin - ACED

Photo: Dr. Laurenda Todome, ACED poster presentation on Benin project during Rsif 2022 conference in Morocco

Enabling environment for scaling digital innovations

- Project title: Strengthening the political and regulatory environment for the development and scaling up of digital innovations in the agricultural sector in Benin (REPINAB)
- Implementing organisation: Centre d'Actions pour l'Environnement et le Développement Durable (ACED)
- Read more here: <https://agridi.org/portfolio/repinab/>



RENFORCEMENT DE
L'ENVIRONNEMENT POLITIQUE
ET RÉGLEMENTAIRE POUR

**LE DÉVELOPPEMENT ET LA MISE
À L'ÉCHELLE DES INNOVATIONS
NUMÉRIQUES DANS LE SECTEUR
AGRICOLE AU BÉNIN (REPINAB)**



Multiple benefits to Benin's research and innovation ecosystem

1. Rsif graduates, with strong research networks, able to “win” additional research awards.
2. Reduced “inbreeding” at Beninese universities
3. UAC benefit from various trainings e.g.
 1. Information literacy training workshops
 2. Arranged visit for UAC staff to Morocco
4. New institutional research and training networks including
5. Graduates equipped with advanced technologies, cross cutting and technical skills and relevant international, regional and national networks
6. 7 journal publications from Beninese Rsif students to date in high impact journals
7. Research outputs and knowledge generated in line with national priorities: e.g. machine learning, plant breeding etc.
8. Three research and innovation grants worth more than USD 700,000 under implementation

Thank You

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