

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





Rsif in Senegal



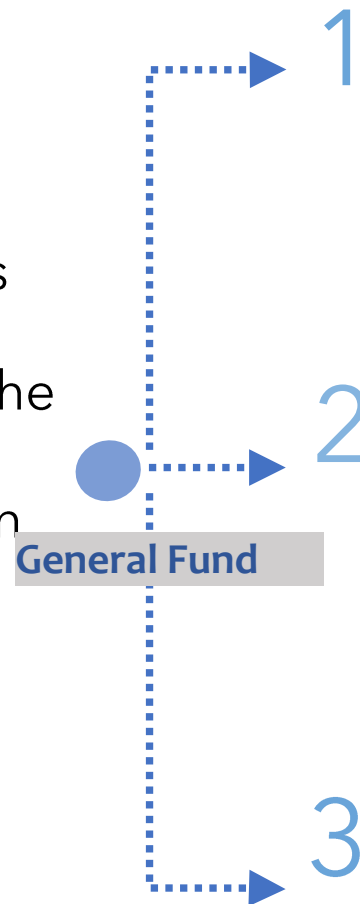
Research. Innovate. Transform Africa

Rsif Designed for Impact

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

Objectives

- Create a stock of highly skilled scientists, professionals and innovators in 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



Window 1:
Scholarships, institutional capacity building, partnerships & networks

Window 2:
Research Grants

Window 3:
Innovation Grants and creation of innovation environments

Rsif supports five priority thematic areas



ICTs including big data and artificial intelligence



Food security and agribusiness



Minerals, mining and materials engineering



Energy including renewables



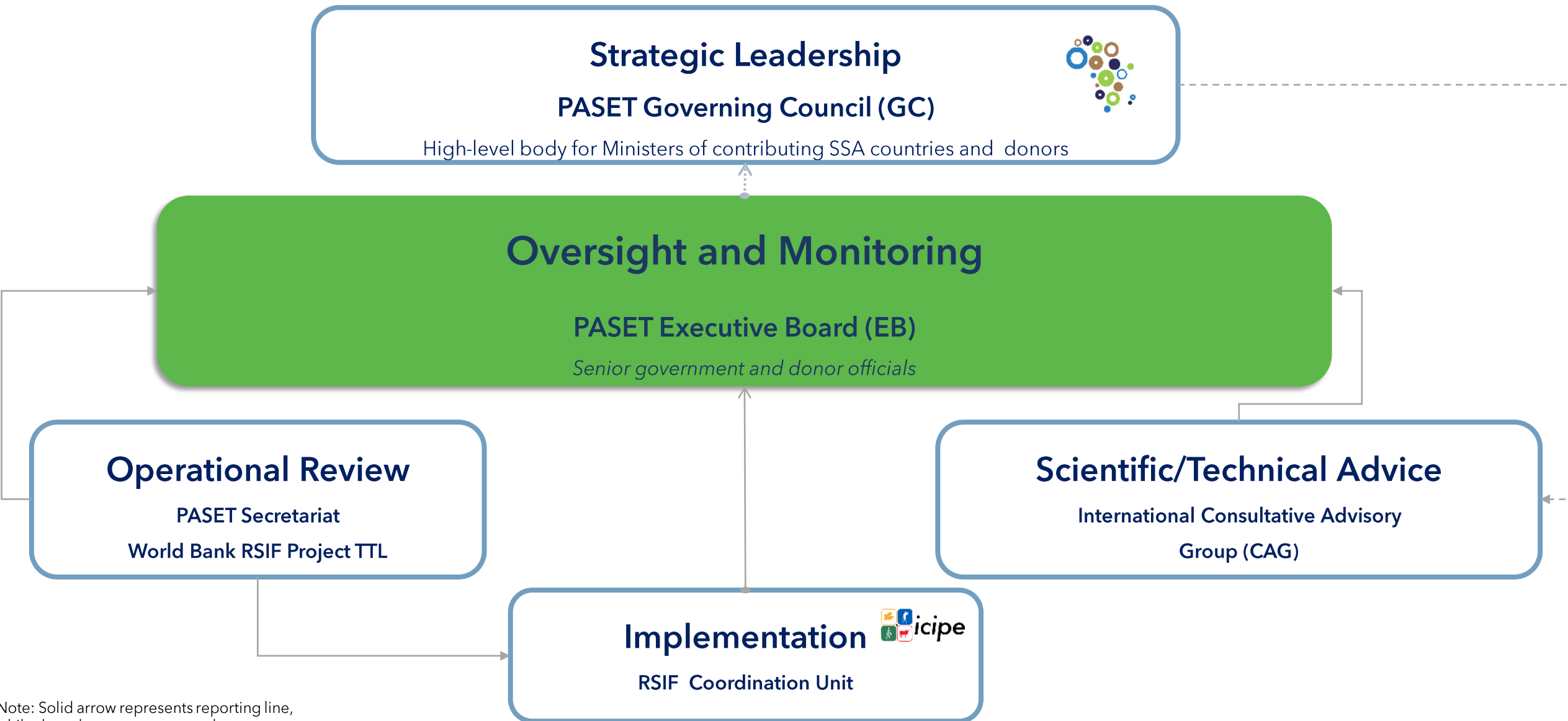
Climate change

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



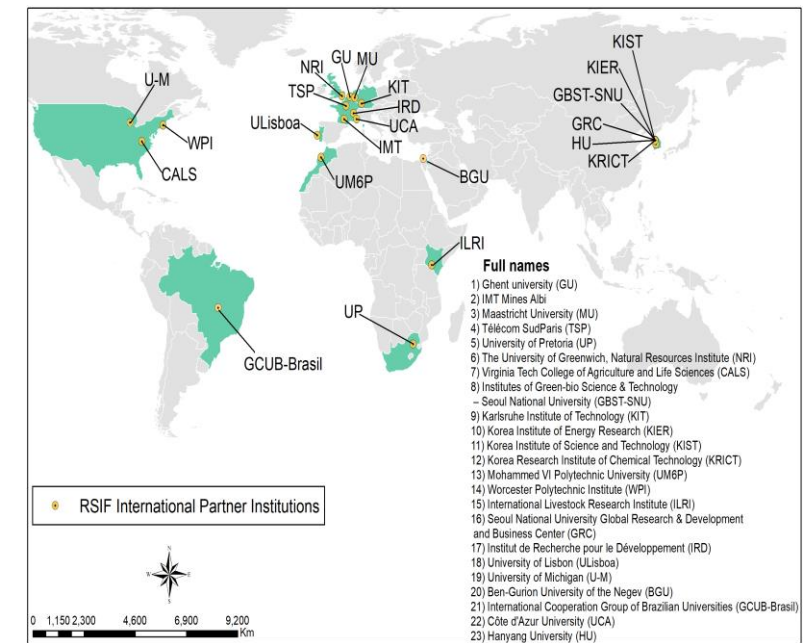
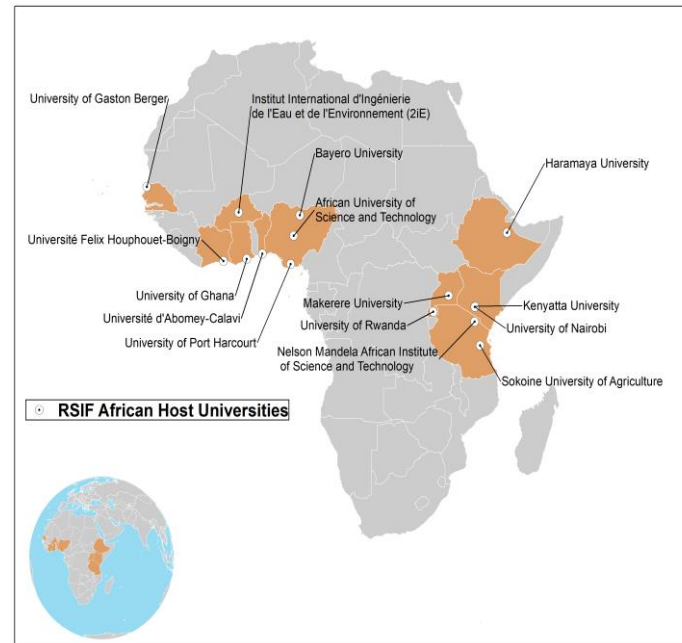
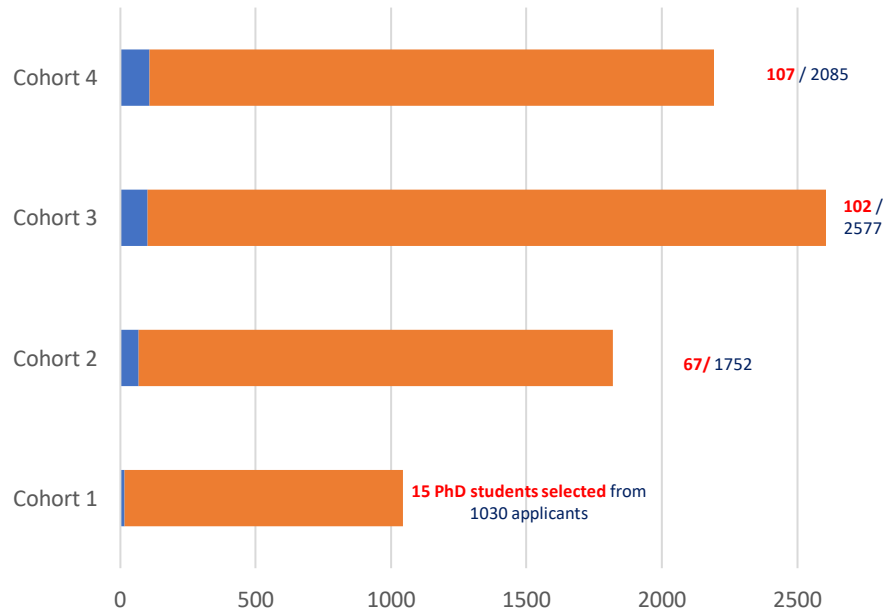
291 PhD Scholarships



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



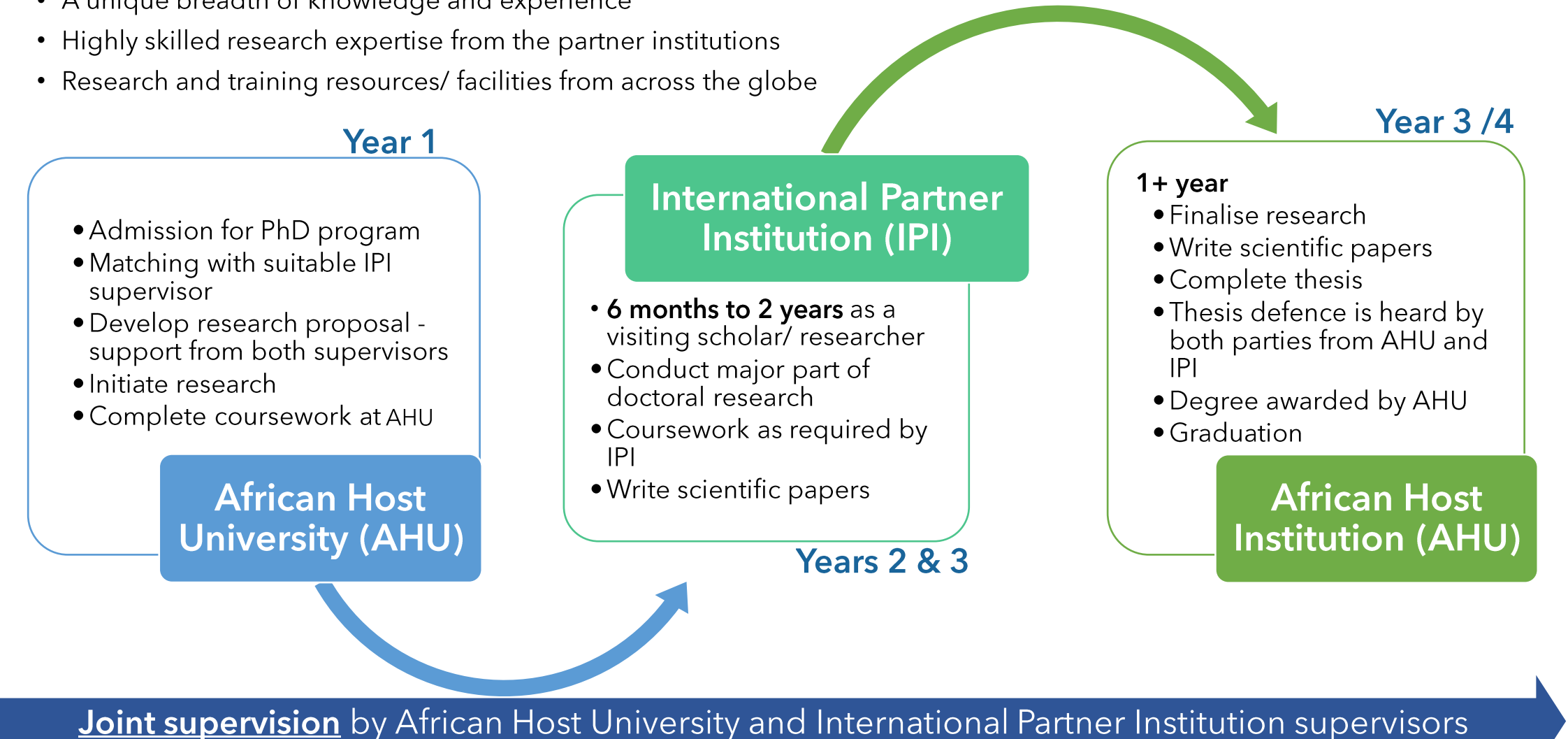
23 International Partner Institutes/universities



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 Senegal

Senegal is an Rsif founding member

- H.E. President Macky Sall launched Rsif in 2015.
- Senegal participates in PASET Executive Board
Prof. Mamadou Sy, MESRI

Investments in Rsif in pursuit of common agenda

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

Significant benefits to Senegal



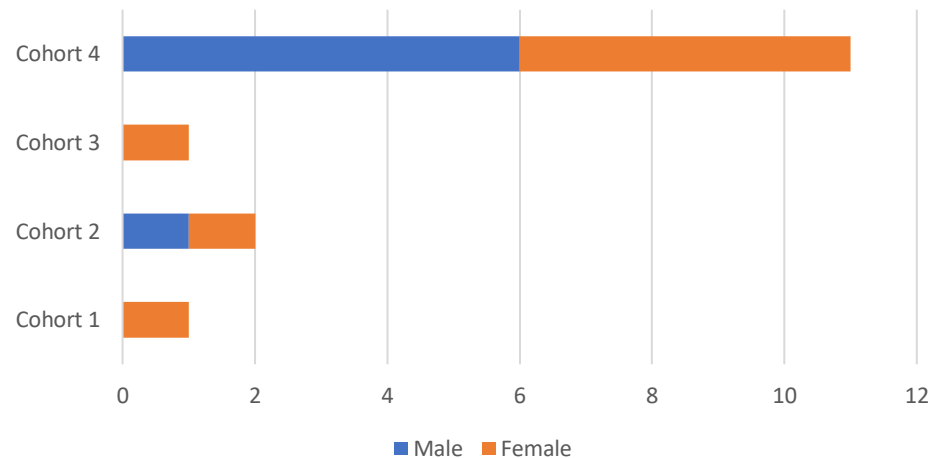
Photo: Prof Aminata Sall Diallo, PASET Executive Director, at the 5th PASET Forum in Kigali, Rwanda in 2019.

Senegalese Rsif PhD Students Overview



- Total of 15 active Senegalese Rsif doctoral scholars (53% women) in the four cohorts
- Scholars registered under 5 thematic areas in 5 African Host Universities
- 6 journal publications to date

Number of Senegalese Rsif PhD Scholars



Thematic Area	African Host University	Scholars
Climate Change	Bayero University Kano, Nigeria	3
ICTs including Big Data & Artificial Intelligence	University of Gaston Berger	7
Minerals, Mining and Materials Engineering	Kenyatta University, Kenya	1
Food Security and Agribusiness	Makerere University, Uganda	1
Energy including renewables	2iE, Burkina Faso	3

Building Senegal's Research and Training Ecosystem

Senegalese national RSIF PhD Students (15) Status

Cohort 1

- 1 scholar completing PhD Studies and set to graduate
- 5 publications

Cohort 2

- 1 scholar preparing to start sandwich program at international partner institute
- 1 scholar undertaking research at the international partner institute
- 1 publication

Cohort 3

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

Cohort 4

- 11 scholars have reported to their AHU, in first year of study
- 1 publication



Photo: Fatoumata Thiam, Senegalese scholar in cohort 1

One Senegalese Rsif PhD student in cohort 1



No	Name	Gender	Rsif African Host University	International Partner Institution	Research Topic	Status
1	Fatoumata Thiam	Female	University Gaston Berger, Senegal	Worcester Polytechnic Institute, USA	Designing selfoptimized irrigation in the Sahel area based on the Internet of Things	Preparing to defend thesis 5 publications.

Senegalese Rsif PhD Student Status – Cohort 2 & 3

No	Name of Student	Gender	Rsif African Host University	PhD Research Project Title	Status	International Partner Institution
Cohort 2 (2020)						
2	Ndeye Penda Fall	Female	University of Gaston Berger, Senegal	Optimisation in LoRaWAN mobility in IoT	At UGB preparing to go for sandwich program	Telecom Sud Paris, France
3	Bara Diop	Male	University of Gaston Berger, Senegal	Automatic categorization of pages in a semantic wiki	At UM6P, Morocco 1 publication	University Mohammed VI Polytechnic, Morocco
Cohort 3 (2021)						
4	Aminata Abdoulaye Ndiaye	Female	University of Gaston Berger, Senegal	Distributed storage and management of heterogeneous large files of geospatial and location-based data with NoSQL data stores	At UGB, Senegal	To be confirmed

Senegalese Rsif Students cohort 4 (2022) - 1

No	Name	Gender	Host University	Research Topic	Status	International Partner Institution
5	Khadidiatou Ba	Female	Bayero University Kano, Nigeria	Investigate the level of vulnerability of agriculture to salinisation in the context of climate change in the Kaolack region	At BUK, Nigeria	To be confirmed
6	Momath Diankha	Male	Bayero University Kano, Nigeria	Ecosystem Services Assessment in West African Urban Forests and the impact on the dwellers' wellbeing between 1990 and 2020. Case study: Mbao Classified Forest Dakar (Senegal) and Urban Park Bangr Weoogo Ouagadougou (Burkina Faso)	At BUK, Nigeria	To be confirmed
7	Tening Diouf	Female	Bayero University Kano, Nigeria	Combined influence of organic and mineral manures on the sustainable intensification of maize cultivation and its nutritional value in Senegal	At BUK, Nigeria	To be confirmed
8	Georges Ambour DIEDHIOU	Male	Institut International d'Ingénierie de l'Eau et de l'Environnement (2iE), Burkina Faso	Optimization of the design of improved stoves for the combustion of biomass charcoal briquettes for clean cooking needs in the West African context	At 2iE, Burkina Faso	To be confirmed
9	Mame Sokhna Thiane SECK	Female	2iE, Burkina Faso	Study of a prototype of an innovative absorption refrigeration machine	At 2iE	To be confirmed
10	Aminata SARR	Female	2iE, Burkina Faso	Evaluation of the performance of solar irrigation system in the Niayes area through the effect of climate parameters and water quality to develop agriculture in the context of Water-Food-Energy nexus	At 2iE 1 publication	Matched with Virginia Tech, USA

Continued Senegalese Rsif PhD students Cohort 4 (2022) - in first year of study

No	Name	Gender	Host University	Research Topic	Status	International Partner Institution
11	Aliou BA	Male	Makerere University, Uganda	Genomic prediction on important agricultural traits in sweet potato	At MAK, Uganda	To be confirmed
12	Fatou Cire Emilie Sane	Female	University of Gaston Berger, Senegal	A Distributed and Intelligent Platform for Territories' Air Pollution Monitoring	At UGB, Senegal	To be confirmed
13	Abdoulaye Diallo	Male	University of Gaston Berger, Senegal	Semantic Web: Proposal for an Ontology Alignment Approach	At UGB, Senegal	To be confirmed
14	Abdou Karim KANDJI	Male	University of Gaston Berger, Senegal	PhD in Artificial Intelligence	At UGB, Senegal	To be confirmed
15	Thiar Diop	Male	University of Nairobi, Kenya	Contribution on the study of the electrical and optical parameters of a solar cell under different operating regimes: effects of anti-reflective layers	Reporting	To be confirmed

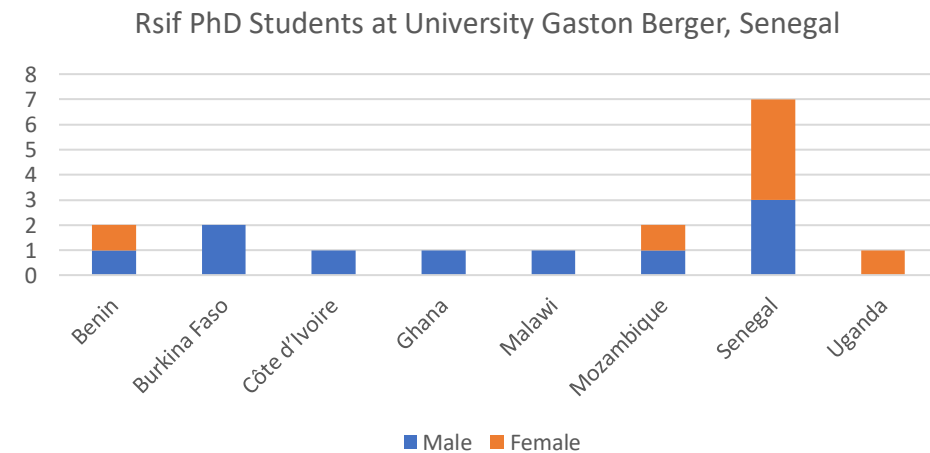
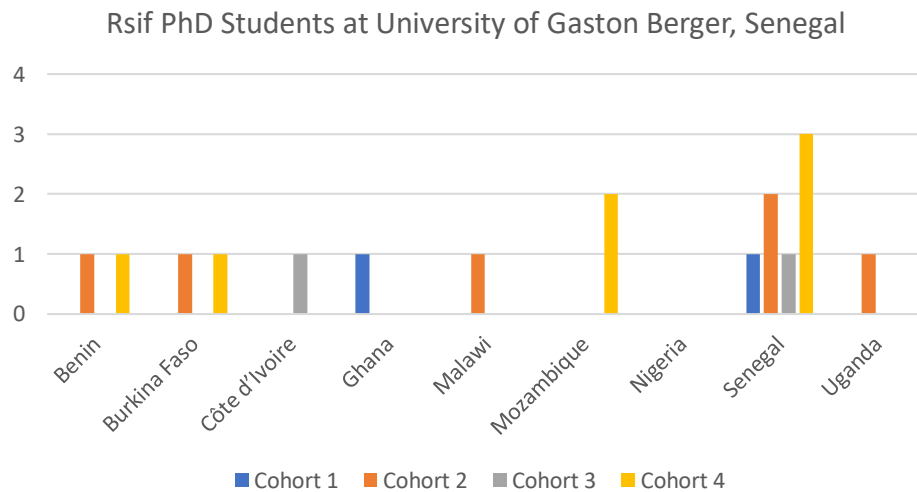
Benefits to Senegalese Institutions



Research. Innovate. Transform Africa

Benefits to University of Gaston Berger an Rsif African Host University

- PhD programme in Computer Science at the African Center of Excellence, MITIC
- Hosting 17 Rsif PhD scholars (41% women) from eight African countries
- 14 journal publications so far



Cohort 1 & 2 Rsif PhD students at UGB

No	Name	Nationality	Gender	Research topic	Status	International Partner Institution
Cohort 1 (2018)						
1	Dr. Emmanuel Effah	Ghana	Male	Robust and Affordable Smart Agri-IoT Technology: From Theoretical Modelling to Real-World Implementation	Graduated 3 publications	Worcester Polytechnic Institute (WPI) , Boston, USA
2	Fatoumata Thiam	Senegal	Female	Designing self-optimized irrigation in the Sahel area based on the Internet of Things	5 publications	WPI, USA
Cohort 2 (2020)						
3	Gerard Kponhinto	Benin	Male	Data Collection and Transmission in the Internet of Things		GRC-SNU, Korea
4	Zakaria Sawadogo	Burkina Faso	Male	Continuous evaluation of Android malware detection features through machine learning	At NRI, UK 3 publications	NRI, University of Greenwich, UK
5	Chimango Nyasulu	Malawi	Male	Towards resilient agriculture to hostile climate change mitigation through weather prediction and crop disease detection model	At UM6P, Morocco 2 publications	University Mohammed VI Polytechnic, Morocco
6	Ndeye Penda Fall	Senegal	Female	Optimisation in LoRaWAN mobility in IoT		Telecom Sud Paris, France
7	Bara Diop	Senegal	Male	Automatic categorization of pages in a semantic wiki	At UM6P, Morocco 1 publication	UM6P, Morocco
8	Harriet Sibitenda	Uganda	Female	Analyzing African social networks data to identify development tracks for Africa through concerns formulated on African social networks		WPI, USA

Cohort 3 (2021) Rsif PhD students at UGB



No	Name	Nationality	Gender	Research topic	Status	International Partner Institution
9	Kpangni Alex Jérémié Koua	Côte d'Ivoire	Male	Healthcare Data Analysis : Anomaly detection, profile discovering, segmentation, classification	At UGB	Discussions initiated with RIT
10	Aminata Abdoulaye Ndiaye	Senegal	Female	Distributed storage and management of large heterogeneous files of geospatial and geolocated data with NoSQL data stores	At UGB	To be confirmed

Cohort 4 (2022) Rsif PhD students at UGB

No	Name	Nationality	Gender	Research Topic	Status	International Partner Institution
11	Merveille Santi Kpêтчéhoué Zinsou	Benin	Female	Diagnosis of black skin diseases from images using machine learning	At UGB	To be confirmed
12	Adama Coulibaly	Burkina Faso	Male	Contribution to the optimization of dynamic remote monitoring by AI UAV: case of transport and digital mobility in Dakar city	At UGB	"
13	Cecilia Rafael Jose Tivir	Mozambique	Female	Web-based intelligent e-learning system based in student model for recommend learning materials		"
14	Hermenegildo Alberto	Mozambique	Male	Anticipating cyber crimes in public and private institutions as a national security strategy - Mozambique		"
15	Abdou Karim KANDJI	Senegal	Male	PhD in Artificial Intelligence	At UGB	"
16	Abdoulaye Diallo	Senegal	Male	Semantic Web: Proposal for an Ontology Alignment Approach	At UGB	"
17	Fatou Cire Emilie Sane	Senegal	Female	A Distributed and Intelligent Platform for Territories' Air Pollution Monitoring	At UGB	"

Strengthening research networks for the University of Gaston Berger

International Partner Institutions (IPIs) signed agreements and exchanging staff and students with University of Gaston Berger

1. Worcester Polytechnic Institute, USA
2. University Mohammed VI Polytechnic, Morocco
3. University of Greenwich, Natural Resources Institute (NRI), United Kingdom
4. Seoul National University Global Research & Development and Business Center (GRC), Korea
5. Telecom SudParis, France

icipe supported two proposal writing meetings for teams from Senegal prepare competitive proposals to the EC funding opportunities

Senegalese graduates and universities are eligible to apply for Rsif Research and Innovation grants



Multiple benefits to Senegal's research and innovation ecosystem

1. RSIF graduates, with strong research networks, able to “win” additional research awards.
2. Reduced “inbreeding” at Senegalese universities
3. UGB received video conference equipment, library resources and benefit from various trainings e.g.
 1. Over six staff trained in proposal writing training workshops
 2. Arranged exchange visits for UGB staff to Morocco and Japan
4. New institutional research and training networks including with WPI, UM6P, etc.
5. Graduates equipped with advanced technologies, cross cutting and technical skills and relevant international, regional and national networks
6. 7 journal publications from Senegalese RSIF students to date in high impact journals
7. Research outputs and knowledge generated in line with national priorities: e.g. Smart agri-IOT, precision irrigation, etc.

Emerging impact - set to "snowball"...

Fatoumata THIAM, Senegal, Rsif Cohort 1

Research area: Precision irrigation

5 journal publications

Registered at University of Gaston Berger, Senegal

Placement at Worcester Polytechnic Institute,
Boston, USA

- Founding member Rsif Alumni network
- Speaker at Rsif Conference 2022 in Morocco



Thank You

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