



# SENEGAL

Country Report 2021



## Summary of RSIF in Senegal

**6** Senegalese RSIF doctoral scholars enrolled

**10** PhD scholars and faculty trained

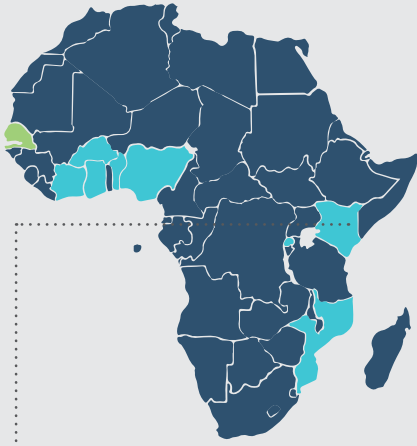
**14** training courses held

The **PASET** Regional Scholarship and Innovation Fund



**PASET**  
Partnership for Skills  
in Applied Sciences,  
Engineering & Technology

*An Africa-led initiative to bridge the skills gap in Applied Sciences, Engineering, & Technology*



# SENEGAL

Country Report 2021

## RSIF IS THE FIRST PAN-AFRICAN SCIENCE FUND OF ITS KIND

Contributing countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Kenya, Mozambique, Nigeria, Rwanda and **Senegal** have made or are at the final stages of making contributions to PASET RSIF, in addition to the Government of Korea, the ACP Innovation Fund of the European Union and the World Bank.

**RSIF is the first Pan-African Science fund of its kind connecting innovative minds to resources for revolutionary solutions.**

It is the flagship product of PASET, an initiative led by African governments aimed at building skills of citizens of sub-Saharan Africa countries in the field of applied sciences, engineering, and technology for national economic growth on the continent. RSIF builds sustainable doctoral training, highly advanced research and innovation ecosystems to develop transformative technologies in Africa for economic growth and development.



At least 40% of the beneficiaries are women and priority is given to young faculty without a PhD.

## Senegal's contribution to RSIF

Senegal is a founding member of PASET. H.E. President Macky Sall launched the Regional Scholarship and Innovation Fund (RSIF) in 2015 together with representatives of the Heads of States in Ethiopia and Rwanda. The Minister of Higher Education, Research and Innovation (MESRI) represents Senegal in the PASET Governing Council, and the Director of Strategy and Planning, Directorate-General of Research and Innovation, MESRI sits in the PASET Executive Board (EB). Moreover, Prof. Aminata Sall Diallo is the Executive Director of the PASET EB.

80% of Senegal's contribution directly supports training of Senegalese scholars. The potential of Senegal's innovative expansion due to this investment is multiplied when leveraged by the funds through matching support from various donors, including the Government of Korea, international partner institutions and others.

By being part of RSIF, Senegal benefits from joint resource mobilization with other countries and capacity building for PhDs and research and innovation far into the future. PASET aims to mobilise over USD 500 million into the RSIF endowment fund, with an estimated 20% to be allocated to research and innovation projects for the benefit of citizens and institutions of participating countries. Many African countries are interested to be part of this.

## RSIF competitively selects and harnesses the brightest minds with:

(i) doctoral scholarships at Host Universities in Africa and 'sandwich' training at selected International Partner Organizations, (ii) research awards, and (iii) innovation awards to faculty of graduated RSIF scholars.

## PASET members have prioritized five cutting-edge thematic areas that will drive growth on the continent:



ICTs including big data & artificial intelligence



Minerals, mining & materials engineering



Energy including renewables



Food security & agribusiness



Climate change

# BENEFITS TO CONTRIBUTING GOVERNMENTS

As a contributor to RSIF, Senegal benefits in more ways than through the cost-effective training of its doctoral students.

Countries also benefit from efficient centralized administration of the scholarship and other grants, support for the RSIF scholars to ensure that they complete on time, as well as regular monitoring reports on the progress of their students. The pooling of funds, the highly competitive selection of host universities, international partners and students, and the efficient administration of the fund enhances the value and increases the benefits. Senegal's participation in RSIF benefits the entire Senegalese higher education, science and innovation ecosystem. All RSIF scholars will undergo high quality doctoral training in competitively selected SSA universities partnered with international universities, with study abroad for part of the time, at a fraction of the cost of sending students abroad for a full time PhD. On successful completion of the PhD, the students will be eligible for research and innovation grants.



## Highly Skilled Human Capital as a Driver for an Emerging Senegal

The rationale for RSIF is that Africa requires world class scientists in priority thematic disciplines that are relevant to national economic growth across sub-Saharan Africa. Some of these areas include orphaned research areas such as mining, minerals

and materials science, energy and information and communication technology among others. This African led program aims to support the training of African innovators and leaders, with focus on women and faculty, to be able to strengthen the capacity of universities to train at the doctoral level and undertake innovative and impactful research for the future needs of the country.





# NURTURING HIGH-IMPACT PARTNERSHIPS

and strengthening research and innovation capacity of University of Gaston Berger

Photo: RSIF host university agreement between UGB and *icipe*, the Regional Coordination Unit for RSIF, was signed in Nairobi, Kenya in presence of the PASET Governing Council and the Executive Director of the PASET Executive Board on the 7 October 2019. [Link](#)



In 2018, University of Gaston Berger (UGB), the Africa Centre of Excellence for Mathematics, Informatics and ICT (MITIC), was competitively selected as an RSIF African Host University in the PASET priority thematic area of ICT, including data science and artificial intelligence. The selected PhD programme at UGB is in Computer Science.

[UGB is currently hosting nine RSIF funded doctoral scholars \(of which four Senegalese\).](#)

Eight more Cohort 3 students will join this year.

As an RSIF African Host University, UGB benefits from various capacity building and technical support, such as strengthening internationalization and accreditation. UGB benefits from linkages with other RSIF AHUs as well as with RSIF international

partner institutions for the RSIF's 'sandwich programme' - whereby students spend 6-24 months at an advanced institution conducting collaborative research.

RSIF has supported the establishment of research networks to support UGB. For example, faculty members participated in a study visit to Mohamed 6 Polytechnic (UM6P), Morocco in September 2019 to identify areas for research collaboration and student sandwich training along with ten other universities.

UGB is co-leading the PASET-RSIF network in Artificial Intelligence and Big Data with University of Rwanda.



Photo: Four faculty members from Senegal, from UGB and from Cheich Anta Diop University, participated in the RSIF grant writing training at *icipe*, Nairobi, Kenya in January 2020.

UGB has received video-conferencing equipment and related facilities to enhance e-learning, particularly as a response to the pandemic. RSIF is also providing increased access to a wide range of scientific journal resources to UGB library and its students.

To help universities respond to COVID-19, *icipe* has provided two training workshops on 'The use of Online Educational Resources in Higher Education' and on 'Online Educational Resources as a Response to the COVID-19 Crisis' co-organized by EPFL (Switzerland) and University Mohammed VI UM6P (Morocco). A training was also done on 'Helping Faculty Deliver their Courses Online during the COVID-19 Crisis' with the Director of Digital Innovation at Arizona State University.

Strengthening university innovation and delivery of personal protective equipments (PPEs) – eight session training were provided by Worcester Polytechnic Institute (WPI), Boston, USA on COVID-19 and 3D printer assembly as well as printing of face masks, face shields and respirator. Universities were able to learn practically how to print various PPEs and supplied these to hospitals and to the public.

## RSIF Training Courses Provided

1. Research Communications and social media
2. Digital Storytelling
3. Reference management & open access
4. Grant writing
5. E-Resources
6. Grievance address mechanisms
7. Sexual harassment
8. Strategies for a successful PhD
9. PhD proposal writing
10. Responsible conduct of research including research ethics
11. Introduction to information literacy
12. Introduction to research methods and statistics, data analysis and management
13. Science presentations
14. Science posters

## Training Applied Researchers in Science and Engineering Fields

RSIF has awarded scholarships to more than 180 RSIF PhD scholars in total from across sub-Saharan Africa. Six of these are Senegalese. More scholars will be selected in Cohort 4 in late 2021.

The Senegalese RSIF graduates are equipped with advancing technologies and strategic research skills for innovation solutions. This provides opportunities for building new university departments that respond directly to national priorities, boosting Senegal's capacity to train at the PhD and postdoctoral level. With the ability to undertake high quality research, Senegal will be well positioned to lead improved outputs, ranking and prestige.

## Breaking Barriers for Women in Science

**Women's participation in research remains low in Africa, with women making up only 30% of the science community.**

67% (four of six) of the RSIF PhD Senegalese scholars in the first three cohorts are female. RSIF assigns attention to not only women, but also, underrepresented groups, seeking to promote family-friendly policies as well as language and accessibility measures.

Consultations on RSIF's gender strategy strategy was first held in Dakar, Senegal, in July 2019, during the The Global Forum on Women in Scientific Research (GoFoWiSeR) conference.



Photo: Senegalese RSIF PhD scholar Fatoumata THIAM exhibits her poster during the 5th PASET Forum in Kigali, Rwanda in May 2019





# RESILIENCE OF RSIF SCHOLARS: COVID-19 CHALLENGES AND LESSONS LEARNT

In a [published article](#), three female RSIF PhD scholars on international sandwich placements in Korea and USA, discuss the impact of COVID-19 pandemic on their personal lives and research journeys. Their immense resilience to pursue despite the unprecedented challenges is evidence of the determination and caliber of RSIF scholars. While the COVID-19 pandemic is affecting all scientists in general, women scientists, especially those with young families, are uniquely impacted. RSIF not only ensures that women scientists enter and thrive in PhD programmes, but also, guarantees that all its scholars are able to circumvent the challenges related to the pandemic. *icipe*, RSIF's RCU is already providing support to scholars in various ways, including online training support, and psychosocial support on issues like mental health. In addition, RSIF is working with partner universities and students towards timely progression in research and overall course completion.

<https://www.universityworldnews.com/post.php?story=20201208123315401>

# CATALYZING RESEARCH

to Generate Transformative  
Technologies for Innovation  
and Development

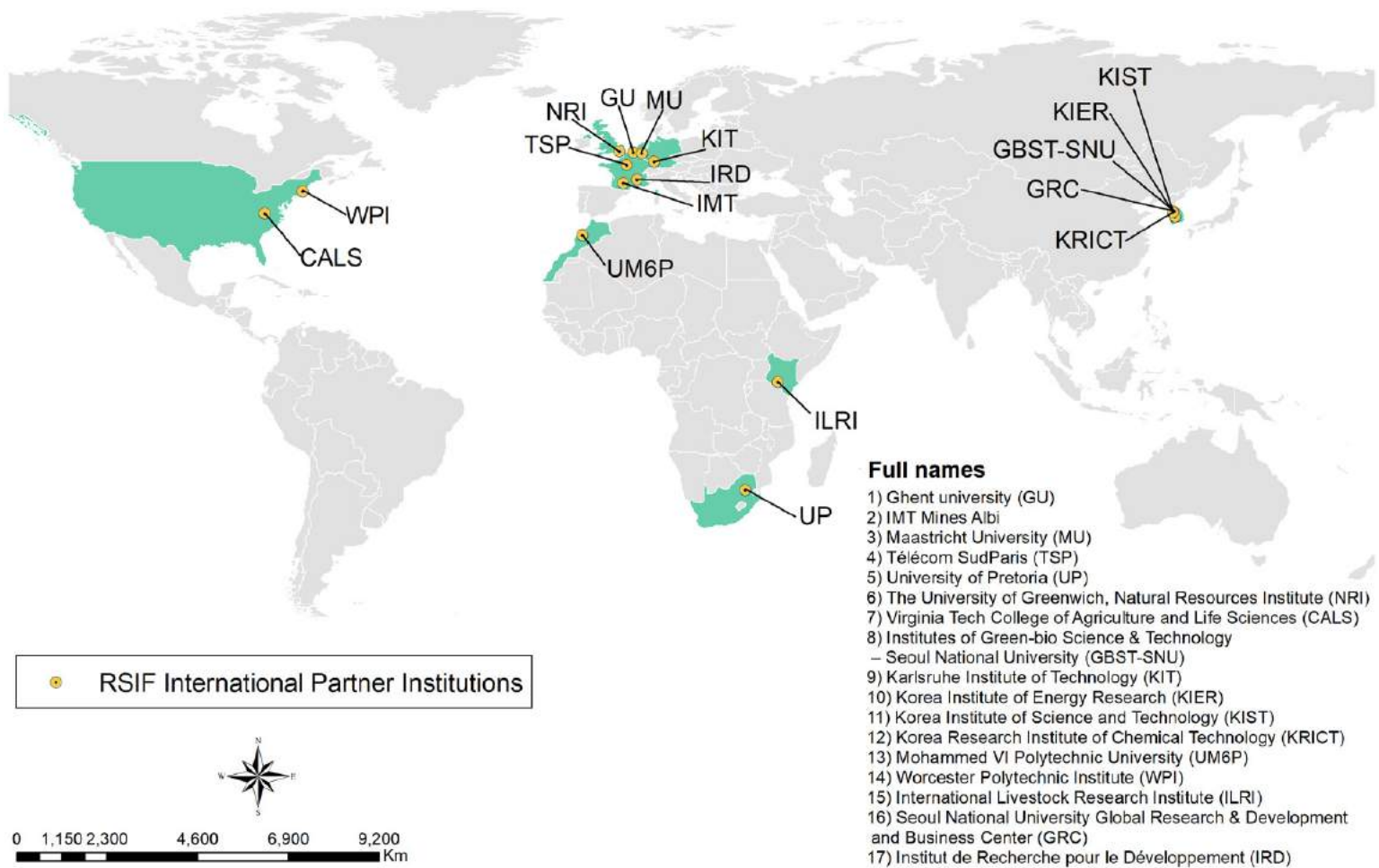
Faculty members engaged in PhD training at UGB are eligible to apply for RSIF Research and Innovation Awards. These competitive grants enable faculty members to advance their research and to help their PhD students generate exceptional research results to solve pressing African challenges.

## Innovation spurs from collaborative knowledge sharing.

RSIF's establishment of international networks provides UGB with a global pool of like-minded innovators.

RSIF is encouraging partnership with international partners and private firms. This will contribute to enhanced partnership in higher education, science and innovation ecosystem and collaboration in training, research and innovation.

In addition, Senegalese institutions are eligible to compete for grants in the area of Agri-based digital innovations under the ACP Innovation fund for Western Africa that *icipe* is also managing.



Through PASET RSIF the cost of PhD training is significantly lowered, while also reducing inbreeding in Senegalese universities since PhD training will be done in other African universities and international partner institutions.

By working closely with academic institutions, relevant investors and governments, and other stakeholders within sub-Saharan Africa; specialized knowledge will be integrated in the region and transferred to the future generation.

# SPOTLIGHT ON AFRICA'S FUTURE LEADERS

in Science, Engineering  
and Technology

**"I love science and opportunities it gives for works and its multiple research fields."**



RSIF PhD scholar **Fatoumata THIAM** - University Gaston Berger (UGB), Senegal with sandwich research placement at Worcester Polytechnic Institute, Boston, USA.



I want to build techniques that will facilitate water access and save this precious resource in my region, which is threatened by the scarce rainfall, and unpredictable weather. The Niayes, Senegal, has an exceptionally favorable climate for farming, and represents a natural base of agricultural production in Senegal. However, the region is confronted with difficulties related to increasing salt intrusion, destruction of the strip of casuarina

trees, caused by speculation and irregular sale of land. In addition, farmers face difficulties regarding access to water. We aim to figure out the irrigation paradigm in Niayes and propose a solution that seeks to optimize and automate irrigation system using the Internet of Things (IoT) and Artificial Intelligence (AI). This will not only impact the planet by saving water but also would improve crop yields.

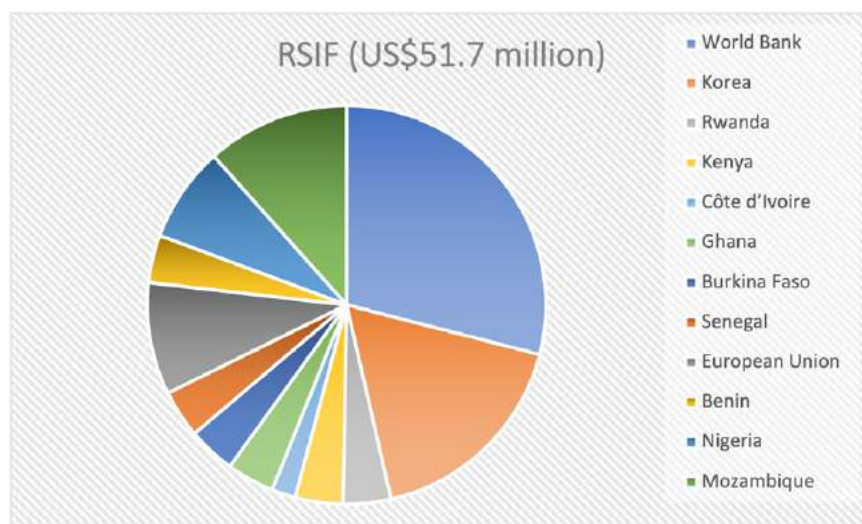
[Read more](#)

## Senegalese RSIF scholars and Research Topics

Name	Research Topic	African Host University
Fatoumata Thiam	Designing self-optimized irrigation in the Sahel area based on the Internet of Things	University of Gaston Berger, Senegal
Madicke Mbaye	Optimization of radio medium access methods in LPWAN networks (Low Power Wide Area Network)	Africa Centre of Excellence for Mathematics, Informatics and ICT (MITIC)
Ndeye Penda Fall	Intelligent IoT data classifier	
Bara Diop	Automatic categorization of pages in a semantic wiki	
Oré Ndiaye Diédhiou	New authentication schemes for the Internet of Things (IoT)	
Aminata Abdoulaye Ndiaye	Distributed storage and management of large heterogeneous files of geospatial and geolocated data with NoSQL data stores	

See repository of RSIF Scholar Research [here](#)

# THE FIRST PAN- AFRICAN SCIENCE FUND INTUITIVELY DESIGNED FOR GROWTH



RSIF is designed for sustainability and has two components: (i) the General Fund and (ii) the Permanent or Endowment Fund, with proceeds to capitalize the general fund.

Country contributions have been earmarked to scholarships, and in some cases to support research and innovation projects, aligned with national needs. So far, most countries have focused on doctoral training.

More importantly, RSIF aims to create a permanent vehicle for supporting science, technology and innovation capacity building through an endowment fund that is being established by the governments.

Senegal is encouraged to continue its leading role in PASET through continued contribution to RSIF and investment in the RSIF endowment fund for lasting returns.

Senegal is a country gaining immense traction that can be used to explore innovative ways of raising more funds for RSIF. By providing tax incentives for private sector companies investing in RSIF, by recommending RSIF to its development partners and by making a fixed annual budgetary allocation to RSIF, Senegal will be in alignment with its commitment to PASET's vision.



## Building the research continuum – from PhD to post-doctoral research and innovation.

RSIF provides full doctoral scholarships and grants for research and innovation, to boost technical and scientific capacity for the advancement and use of transformative technologies to tackle Africa's most pressing challenges.

[Read more](#)


[Sign up to RSIF newsletter](#)


### Connect with us

PASET Regional Scholarship and Innovation Fund (RSIF), Regional Coordination Unit (RCU)

The International Centre of Insect Physiology and Ecology (*icipe*),  
Duduville Campus, Kasarani

P.O. Box 30772-00100, Nairobi, Kenya

 +254 20 863000

 [dg@icipe.org](mailto:dg@icipe.org)  
[icipe@icipe.org](mailto:icipe@icipe.org)



[Rsif@icipe.org](mailto:Rsif@icipe.org)



[Facebook/TheRsif](https://www.facebook.com/TheRsif)



[LinkedIn/company/paset-Rsif/](https://www.linkedin.com/company/paset-Rsif/)



[Twitter/ @pasetRsif](https://twitter.com/pasetRsif)



[Instagram/ @pasetRsif](https://www.instagram.com/pasetRsif)



[www.Rsif-paset.org](http://www.Rsif-paset.org)

The **PASET** Regional Scholarship  
and Innovation Fund



**PASET**  
Partnership for Skills  
in Applied Sciences,  
Engineering & Technology

*An Africa-led initiative to bridge the skills gap in Applied Sciences, Engineering, & Technology*

Regional Coordination Unit



**icipe**