

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





Rsif in Ghana



Research. Innovate. Transform Africa

Rsif - Designed for Impact

Flagship project of PASET



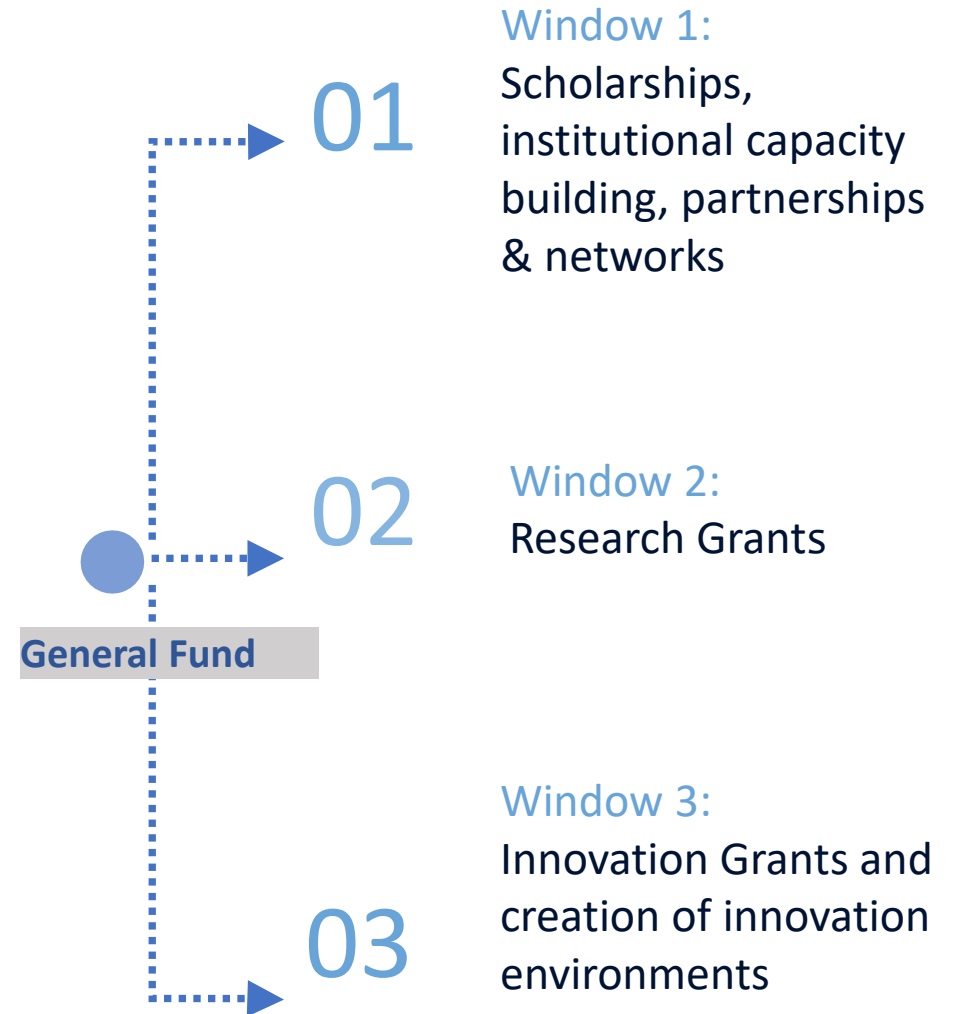
Building sustainable doctoral training, research and innovation ecosystems for development in Africa

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

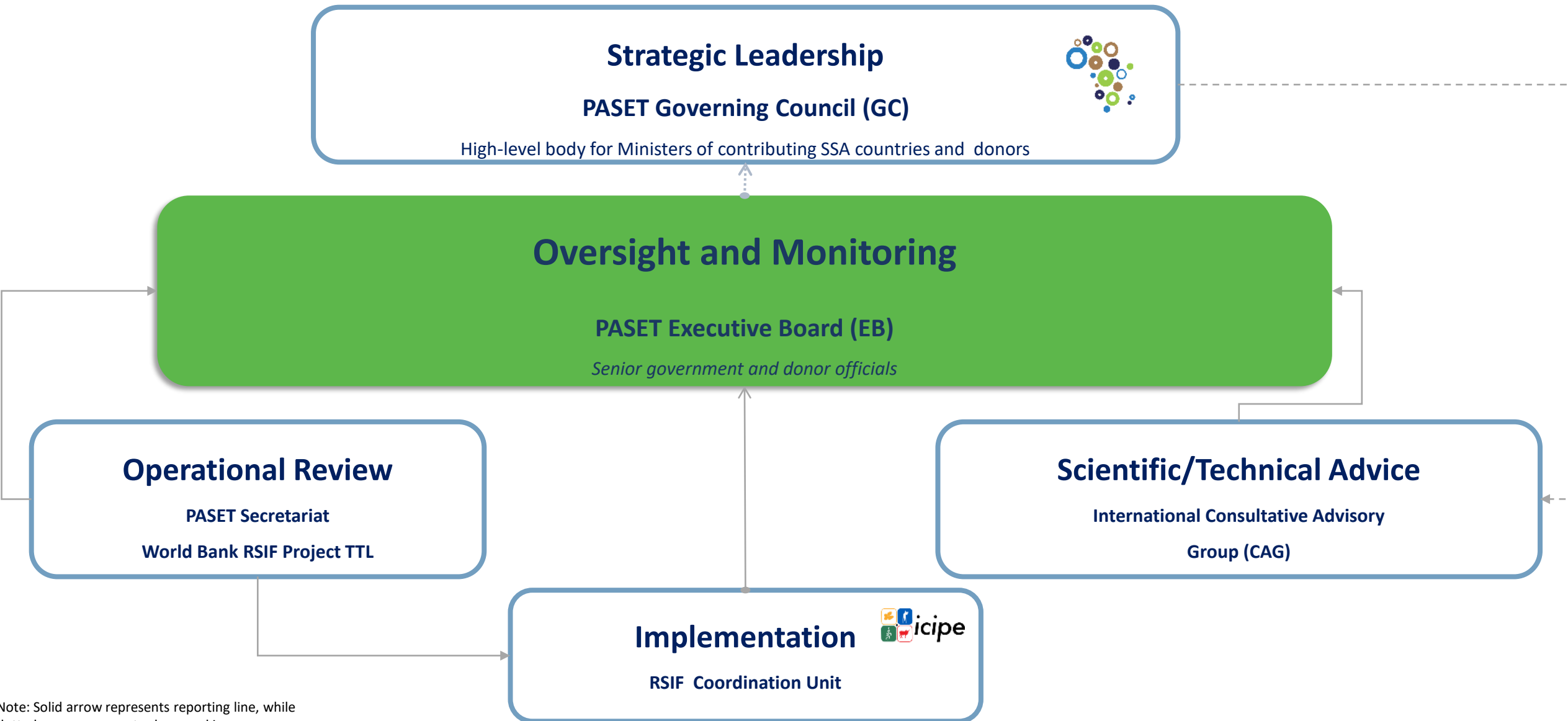


Rsif is a unique African initiative

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



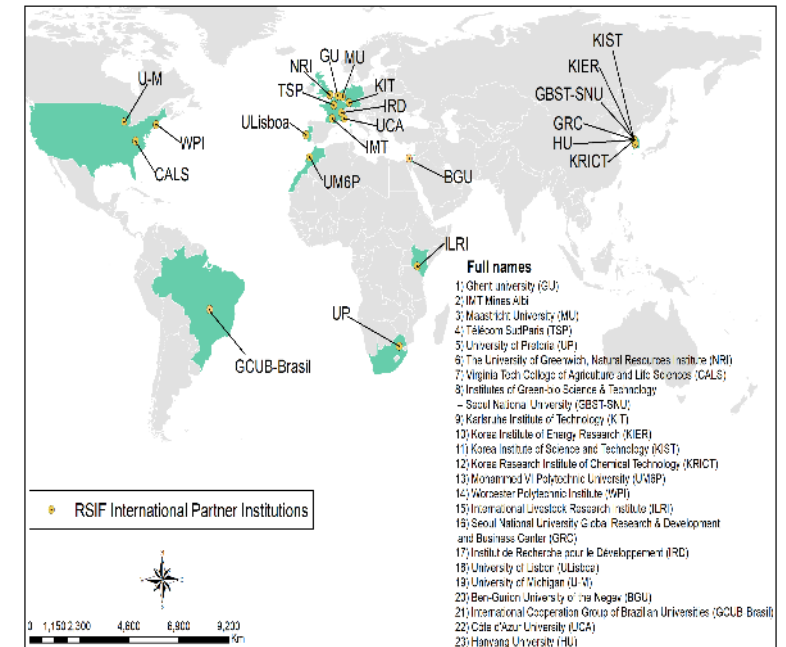
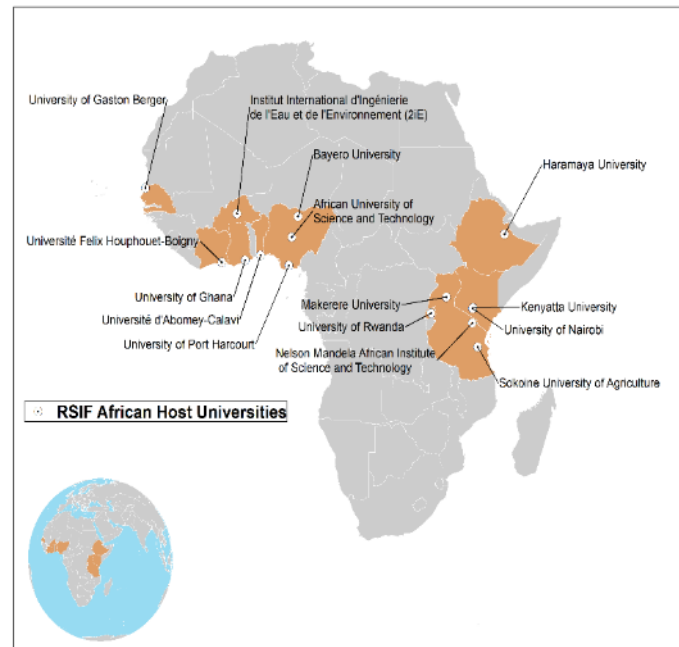
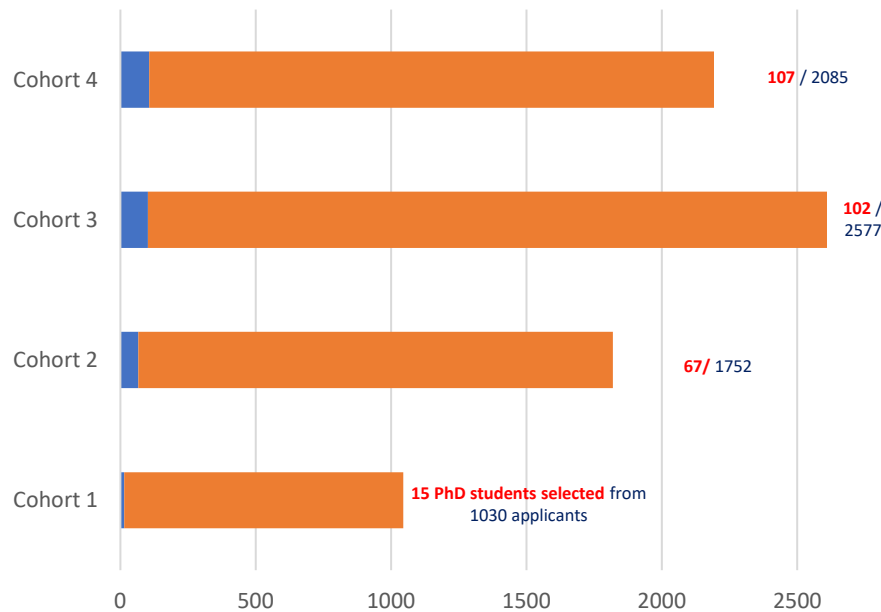
291 PhD Scholarships



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



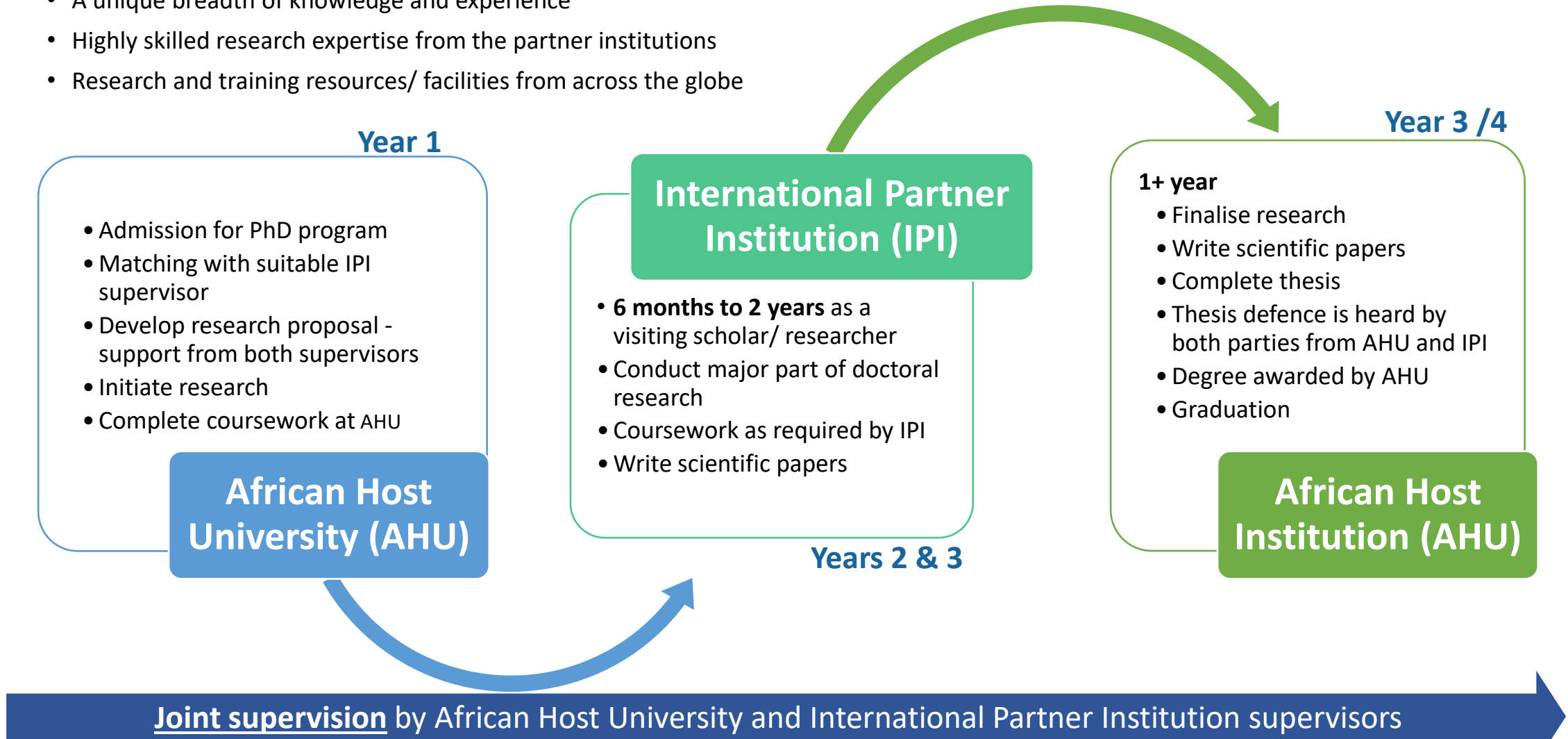
23 International Partner Institutes/universities



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 Ghana

- **Ghana is the current vice-chair of PASET**
 - Participates in PASET Executive Board – Prof. Mohammed Salifu, Director-General, Ghana Tertiary Education Commission (GTEC)
- **Investments in Rsif in pursuit of common agenda**
 - supporting the building of international level PhD programmes anchored within African universities (i.e. UG)
 - accelerating high quality PhD training
 - strengthening capacity for innovative research and respond to African challenges
- **Significant benefits to Ghana**
 - Leveraged additional benefits in Rsif funds from Korea, EU, World Bank and others through *icipe*



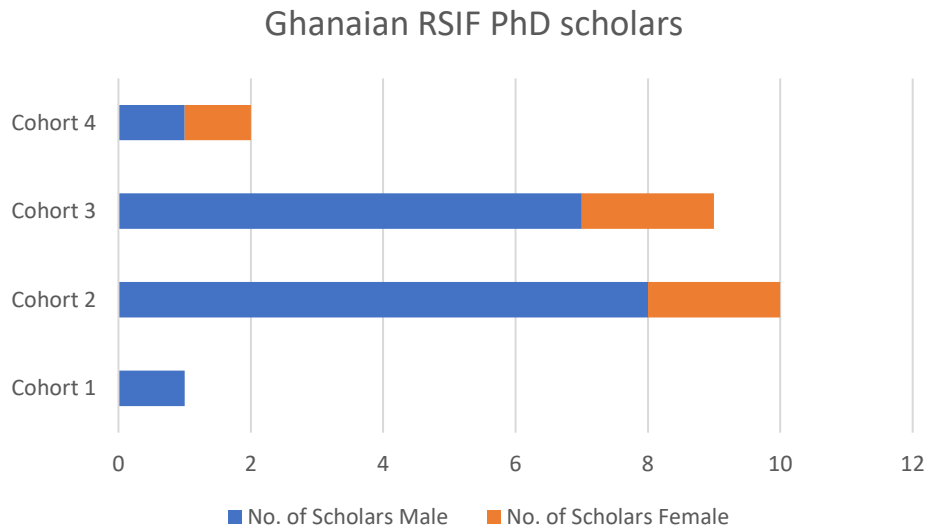
Photos: Hon. Mr. John Ntim Fordjour (MP, Deputy Minister of Education, represented Hon. Dr. Yaw Osei Adutwum, Minister of Education, Ghana, vice-chairperson of PASET Governing Council (GC) and Hon. Dr. Valentine Uwamariya, Chair, PASET GC, Kigali, 2 February 2023. Prof. Salifu is Ghana's representative in the PASET EB, while a Ghanaian national, Dr George Afeti serves as the vice-chair of the Consultative Advisory Group.



Ghanaian Rsif PhD Students Overview



- 22 Ghanaian Rsif doctoral scholars (23% women)
- Scholars registered under 4 thematic areas in 7 African Host Universities (reduced “in-breeding”)
- 12 journal publications



Thematic Area	African Host University	Scholars
ICTs including Big Data & Artificial Intelligence	University of Rwanda, Rwanda	2
	University of Gaston Berger	1
Minerals, Mining and Materials Engineering	Kenyatta University, Kenya	1
	Nelson Mandela African Institution of Science and Technology, Tanzania	1
Food Security and Agribusiness	University of Ghana, Ghana	14
Energy including renewables	University of Port Harcourt, Nigeria	2
	University of Nairobi, Kenya	1

Building Ghana's Research and Training Ecosystem: Ghanaian national Rsif PhD Students (22) Status

Cohort 1

- 1 scholar completed PhD Studies and graduated
- 3 journal publication

Cohort 2

- 5 scholars at their AHUs and collecting data in the field
- 5 Scholars already started their international research placements
- 5 journal publications

Cohort 3

- 9 scholars at their respective AHUs and collecting data in the field
- Scholars to start their international research placements
- 4 Journal publications

Cohort 4

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



Photo: Dr Emmanuel Effah (Rsif's first graduate of Ghanaian nationality)

One Ghanaian Rsif PhD student (cohort 1) - Graduated



No	Name	Gender	Rsif African Host University	International Partner Institution	Research Topic	Status
1	Dr. Emmanuel Effah	Male	University Gaston Berger, Senegal	Completed placement at Worcester Polytechnic Institute, USA	Robust and Affordable Smart Agri-IoT Technology: From Theoretical Modelling to Real-World Implementation	<p>Graduated. 3 publications.</p> <p>Lecturer, Dept. of Computer Science and Engineering, University of Mines and Technology, Tarkwa, Ghana.</p> <p>Selected for award of a RSIF JIRA grant (US\$ 80,000).</p>

Ghanaian Rsif PhD students in cohort 2

No	Name	Gender	Rsif African Host University	Research Topic	Status	International Partner Institution
2	Esther Aba Eshun	Female	University of Ghana (UG)	Livelihood Diversification and Food Security of Youth Headed Households in Coastal Fishing Communities in Ghana	At UG.	Institute of Green-bio Science & Technology – Seoul National University (GBST-SNU), Korea
3	Rosalyn Naa Norkor Baddoo	Female	University of Ghana	Livelihood and food security status of rice value chain actors in the Volta and North East regions of Ghana	At UG.	GBST-SNU, Korea
4	Benjamin Musah Abu	Male	University of Ghana	Smallholder agricultural commercialization, and food and nutrition security in Ghana	In Korea on sandwich placement 3 journal publications	GBST-SNU, Korea
5	Benjamin Sarfo	Male	University of Ghana	Impact of Safe Food Business Practices on Street Food Vendors Business Performance in Urban Ghana	At UG. Associated with RSIF-UG research project.	Seoul National University Global R&DB Center (GRC-SNU), Korea.
6	Harry Bleppony	Male	University of Ghana	Performance of Non-Traditional Agricultural Exports in Ghana	In Korea on sandwich placement	GBST-SNU, Korea
7	Motin Bashiru	Male	University of Ghana	Renewable resources use in smallholders' integrated farm model: A design thinking approach for sustainable farm enterprise in Ghana	Associated with RSIF-UG research project	GRC-SNU, Korea
8	Nana Okyir Baidoo	Male	University of Ghana	Economic Profitability Of Diversified Cocoa Farmers In The Western, Western North And Ashanti Regions Of Ghana	In Korea on sandwich placement Associated with RSIF-UG research project. 1 publication.	GBST-SNU, Korea
9	Saani Nassam Iddrisu	Male	University of Ghana	Analysis of Demand and Financial Viability of Processed Mushrooms in Ghana	In Korea on sandwich placement	GBST-SNU, Korea
10	Martin Ansong	Male	University of Nairobi, Kenya	Technical assessment and environmental impacts of renewable energy and electric vehicles in Ghana	In Germany on sandwich placement	Karlsruhe Institute of Technology (KIT), Germany
11	Shaibu Mohammed	Male	University of Port Harcourt	Analysis of Oil and Gas Well Production Data: Accounting for Varying Decline Exponent of a Well Production Data	At Uniport, Nigeria. 1 journal publication	To be confirmed

Ghanaian Rsif PhD students in cohort 3

No	Name	Gender	Rsif African Host University	Research Topic	Status	International Partner Institution
12	Afia Owusuah Akyaw	Female	Kenyatta University, Kenya	Fabrication of efficient monolithic all-perovskite tandem solar cells	At KU.	Korea Institute of Science and Technology (KIST)
13	Jonas Bayuo	Male	Nelson Mandela African Institution of Science and Technology, Tanzania	Adsorption-desorption of heavy metals and regeneration of the exhausted adsorbents	At NM-AIST. 4 publications.	Korea Institute of Science and Technology (KIST)
14	Collins Ebenezer Appiah	Male	University of Ghana , Ghana	Precision Agriculture, Livelihood Diversification and Climate Resilience of Cocoa Farming Households in Western Ghana	At UG.	IMT Mines Albi-Carmaux, France or Virginia Tech, USA
15	Cuthbert Kaba Nabilse	Male	University of Ghana, Ghana	Pathways for sustainable transformation of local food systems in Ghana	At UG.	To be confirmed
16	Frederick Ziinbalang Puozaa	Male	University of Ghana, Ghana	Agricultural market volatility and food security in Ghana	At UG	To be confirmed
17	George Akrong Morton	Male	University of Ghana, Ghana	Impact of participation in innovation platform on productivity and commercialization of rice-producing households	At UG.	To be confirmed
18	Nana Anima Mary Akrofi	Female	University of Ghana, Ghana	Climate Change, Women Dietary Diversity And Seasonal Food Security Status Of Cocoa Farming Households In Ghana	At UG.	IMT Mines Albi-Carmaux, France
19	Destiny Kwabla Amenyedzi	Male	University of Rwanda, Rwanda	Use of smartphones in teaching ICT and pupils' skills achievement in Ghana basic schools	At UR	Rochester Institute of Technology (RIT)
20	Promise Ricardo Agbedanu	Male	University of Rwanda, Rwanda	Self learning anomaly detection system for Internet of Things	At UR	RIT

Ghanaian Rsif PhD students in cohort 4

No	Name	Gender	Rsif African Host University	Research Topic	Status	International Partner Institution
21	Mohammed Tiyumtaba Shaibu	Male	University of Ghana, Ghana	Integrated modelling of the impacts of climate change and adaptation technologies on crop-livestock production systems in northern Ghana	At UG.	To be confirmed
22	Gloria Adjei	Female	University of Port Harcourt, Nigeria	Catalytic Conversion of CO2 into Valuable Fuels Using a Hybrid Approach.	At UniPort.	To be confirmed

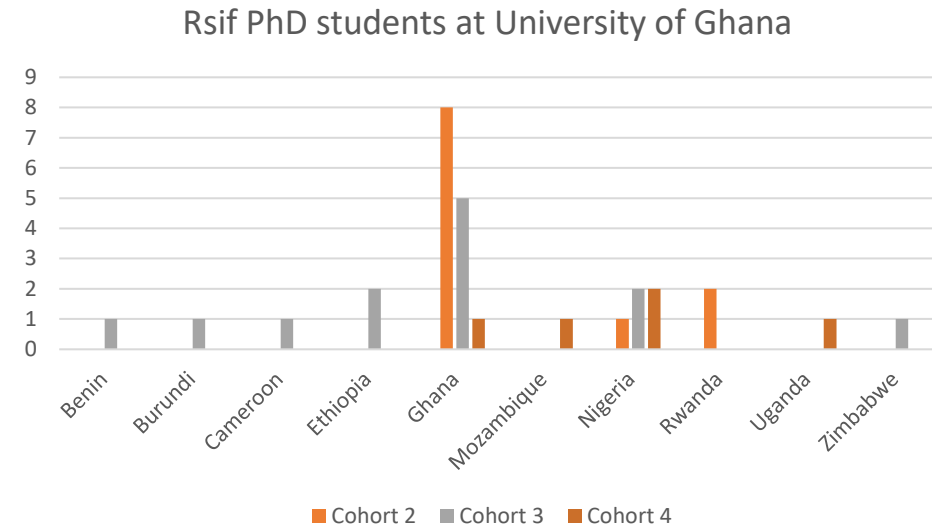
Benefits to Ghanaian Institutions



Research. Innovate. Transform Africa

Benefits to University of Ghana School of Agriculture- an Rsif African Host University

- PhD Program in Applied Agricultural and Policy / Agribusiness
- Hosting 29 Rsif PhD scholars (38% women)
- 10 African nationalities (Benin, Burundi, Cameroon, Ethiopia, Ghana, Mozambique, Nigeria, Rwanda, Uganda and Zimbabwe)
- Majority faculty returning to home institutions upon graduation
- 4 publications to date



Rsif PhD students hosted at University of Ghana (cohort 2)

No	Name	Gender	Nationality	Research Topic	Status	International Partner Institution
1	Esther Aba Eshun	Female	Ghana	Livelihood Diversification and Food Security of Youth Headed Households in Coastal Fishing Communities in Ghana	At UG.	Institute of Green-bio Science & Technology – Seoul National University GBST-SNU Korea
2	Rosalyn Naa Norkor Baddoo	Female	Ghana	Livelihood and food security status of rice value chain actors in the Volta and North East regions of Ghana	At UG.	GBST-SNU, Korea
3	Benjamin Musah Abu	Male	Ghana	Smallholder agricultural commercialization, and food and nutrition security in Ghana	In Korea on sandwich placement 3 publications	GBST-SNU, Korea
4	Benjamin Sarfo	Male	Ghana	Impact of Safe Food Business Practices on Street Food Vendors Business Performance in Urban Ghana	At UG. Associated with RSIF-UG research project.	Seoul National University Global R&DB Center (GRC-SNU), Korea.
5	Harry Bleppony	Male	Ghana	Performance of Non-Traditional Agricultural Exports in Ghana	In Korea on sandwich placement	GBST-SNU, Korea
6	Motin Bashiru	Male	Ghana	Renewable resources use in smallholders' integrated farm model: A design thinking approach for sustainable farm enterprise in Ghana	Associated with RSIF-UG research project	GRC-SNU, Korea.
7	Nana Okyir Baidoo	Male	Ghana	Economic Profitability Of Diversified Cocoa Farmers In The Western, Western North And Ashanti Regions Of Ghana	In Korea on sandwich placement. Associated with RSIF-UG research project. 1 publication	GBST-SNU, Korea
8	Saani Nassam Iddrisu	Male	Ghana	Analysis of Demand and Financial Viability of Processed Mushrooms in Ghana	In Korea on sandwich placement	GBST-SNU, Korea
9	Jacinta Nmutaka Umechukwu	Female	Nigeria	Migration, Rural Development, Poverty and Food Security among Agricultural Households in Imo State, Nigeria	At UG	To be confirmed
10	Jean Claude Dusabumuremyi	Male	Rwanda	Zero Energy Cooling and Drying System for Reduction of Postharvest Losses of Fresh Carrot (Daucus Carota L) In Rwanda	At UG	IMT Mines Albi, France
11	Safia Kalisa	Female	Rwanda	Overcoming Agricultural Value Chain Challenges, a Gateway to Food Security and Economic Growth	At UG	To be confirmed

Rsif PhD students at University of Ghana (cohort 3)

No	Name	Nationality	Gender	Research Topic	Status	International Partner Institution
12	Jemima Alla Houessou	Benin	Female	Policy analysis and competitiveness of orange fleshed sweet potato in Benin		Discussions in progress with GCUB, Brazil
13	Jackson Ntunzwenimana	Burundi	Male	Trends and drivers of food production and distribution for ensuring food security in Burundi: A case study of irrigated rice in the western province		Discussions in progress with GCUB, Brazil
14	Mercy Ngum Ambe	Cameroon	Female	Efficiency of Fish Marketing in Cameroon		
15	Betelhem Tsedalu Adane	Ethiopia	Female	Value Chain Analysis of Eucalyptus Woodlot Products of Smallholder Farmers in Amhara Region, Ethiopia	At UG	To be confirmed
16	Zerhun Ganewo Galato	Ethiopia	Male	Food Security through commercialization of cereals and underutilized crops: Gender-based analysis to link smallholder farmers with agro-processing industry	At UG	To be confirmed
17	Collins Ebenezer Appiah	Ghana	Male	Precision Agriculture, Livelihood Diversification and Climate Resilience of Cocoa Farming Households in Western Ghana	At UG. Secured internship at International Water Management Institute	IMT Mines Albi-Carmaux, France or Virginia Tech, USA (TBC)
18	Cuthbert Kaba Nabilse	Ghana	Male	Pathways for sustainable transformation of local food systems in Ghana	At UG	Universidade Federal Rural de Pernambuco (UFRPE), Brazil

Cont. Rsif PhD students at University of Ghana (cohort 3)

No	Name	Nationality	Gender	Research Topic	Status	International Partner Institution
19	Frederick Ziinbalang Puozaa	Ghana	Male	Agricultural market volatility and food security in Ghana	At AHU	Matching in progress
20	George Akrong Morton	Ghana	Male	Impact of participation in innovation platform on productivity and commercialization of rice-producing households	At AHU.	Universidade Federal de Roraima (UFRR), Brazil
21	Nana Anima Mary Akrofi	Ghana	Female	Climate Change, Women Dietary Diversity And Seasonal Food Security Status Of Cocoa Farming Households In Ghana	At AHU.	IMT Mines Albi-Carmaux, France
22	Funminiyi Oyawole	Nigeria	Male	Gender, land tenure and smallholder irrigation: Implications for agricultural household welfare under climate change in Nigeria		
23	Oreoluwa Fayemi	Nigeria	Female	Farmers' Attributes Associated with Fish Farm Profitability and the Impact of Fish Farming on Household Food Security in Nigeria		
24	Joseph Manzvera	Zimbabwe	Male	The economic value of indigenous and modern seasonal weather and climate services for maize farmers in Zimbabwe		

Rsif PhD students at University of Ghana (cohort 4)

No	Name	Nationality	Gender	Research Topic	Status	International Partner Institution
25	Mohammed Tiyumtaba Shaibu	Ghana	Male	Integrated modelling of the impacts of climate change and adaptation technologies on crop-livestock production systems in northern Ghana	At UG.	To be confirmed
26	Isaque Manteiga Joaquim	Mozambique	Male	The macroeconomic determinants of private investment in the agrarian chain value of Mozambique (1975-2020)		
27	Oluwafunke Dorcas Komolafe	Nigeria	Female	Impact of contract farming arrangement on youth employment: A case of young farmers' participating in the anchor borrower programme (ABP) in Ogun State, Nigeria		
28	Ufedo Monday Shaibu	Nigeria	Male	Enhancing farmers' resilience to conflict-related risks: Implications on food security and prospects of agricultural insurance		
29	Diana Asero	Uganda	Female	Assessing economic Impact of Postharvest losses within the Pineapple value chain in Uganda		

Strengthening research networks for the University of Ghana

International Partner Institutions (IPIs) signed agreements and exchanging staff and students with University of Ghana.

1. Institutes of Green-Bio Science & Technology –Seoul National University (GBST-SNU), South Korea
2. The Seoul National University - Global Research & Development and Business Center (GRC), South Korea
3. University of Pretoria (UP), South Africa
4. International Cooperation of Brazilian Universities (GCUB)
5. IMT Mines Albi, France

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



Strengthening Research and Innovation Capacity at the University of Ghana



- **High quality research on key developmental issues (2 *Research Grants* awarded to faculty)**

Examples:

- Building Resilient Agribusiness Practitioners through Design Thinking Approach
- Innovating Out of the Urban Street Food Safety Challenges

- **Enhanced innovation ecosystem within the university (1 *Institutional Innovation Capacity Building (ICBP) Grant*)**

- Institutional framework to enhance the Agri-innovation ecosystem within the University of Ghana (IFEA-Eco)

Strengthening Research and Innovation Capacity in Ghanaian Universities

- **Increased University-Industry cooperation, networks & partnerships building**
 - (4 Industrial partners and 4 International partners collaborating in the RSIF Research & Innovation projects)

- **Better qualified scientific workforce through PhD student mentorship**
 - 5 PhD students involved in RSIF research & innovation projects

- **Support to early career scientists to enhance research excellence**
 - 1 Ghanaian RSIF PhD graduate won RSIF Junior Investigator Research Award (\$80,000 per grant)

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

GHANA

Three innovation projects under implementation:

- Digital Tools to Drive Market Access and Manage Ag-Value Chains – Esoko Ltd.
- Scaling AgroCenta Platform and Adoption for Effective Market Linkages in Ghana – AgroCenta Ltd.
- Enhancing farmers' uptake of digital technologies through empirical research, innovation and policy intervention - CSIR-STEPRI



Multiple benefits to Ghana's research and innovation ecosystem

1. RSIF graduates, with strong research networks, able to “win” additional research awards.
2. Reduced “inbreeding” at Ghanaian universities
3. UG 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 UG staff to Morocco and Japan
4. New institutional research and training networks including with Seoul National University, Korea, GCUB-Brazil, IMT Mines Albi, France etc.
5. Graduates equipped with advanced technologies, cross cutting and technical skills and relevant international, regional and national networks
6. 12 journal publications from Ghanaian RSIF students to date in high impact journals
7. Research outputs and knowledge generated in line with national priorities: e.g. Smart agri-IOT, agribusiness, heavy metal removal in wastewater etc.
8. Pilot research and innovation grants worth nearly a million dollars under implementation

Emerging impact – set to “snowball”... First RSIF graduate to return home

Dr. Emmanuel Effah, Ghana RSIF Cohort 1 Alumnus
Lecturer, Computer science and Engineering
University of Mines and Technology, Tarkwa, Ghana

Research area: Robust and Affordable Smart Agri-IoT
Technology

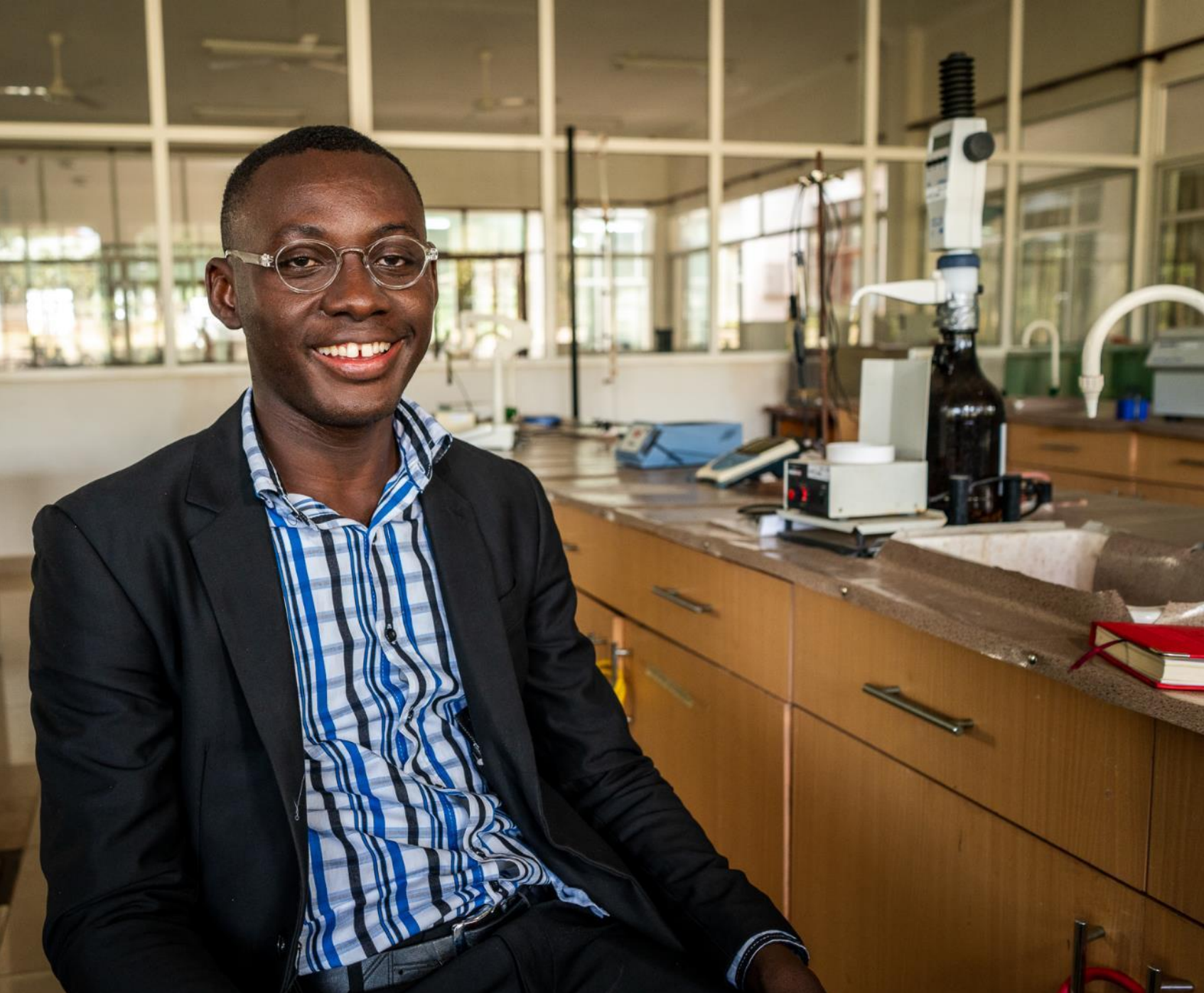
3 journal publications in period

RSIF Research award to kickstart research career

Graduated from University of Gaston Berger, Senegal.
Placement at Worcester Polytechnic Institute, Boston, USA

- Founding member RSIF Alumni network
- Speaker at RSIF Conference 2022 in Morocco
- Returned to University of Mines and Technology, Ghana, training the next generation of science leaders. Solving critical problems.





Video - Meet Jonas Bayuo

Rsif PhD student at the Nelson Mandela African Institution of Science and Technology, Arusha Tanzania.

International placement to Korea Institute of Science and Technology (KIST)

Video link:

<https://www.youtube.com/watch?v=mamg-I7SfOA>

Thank You

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