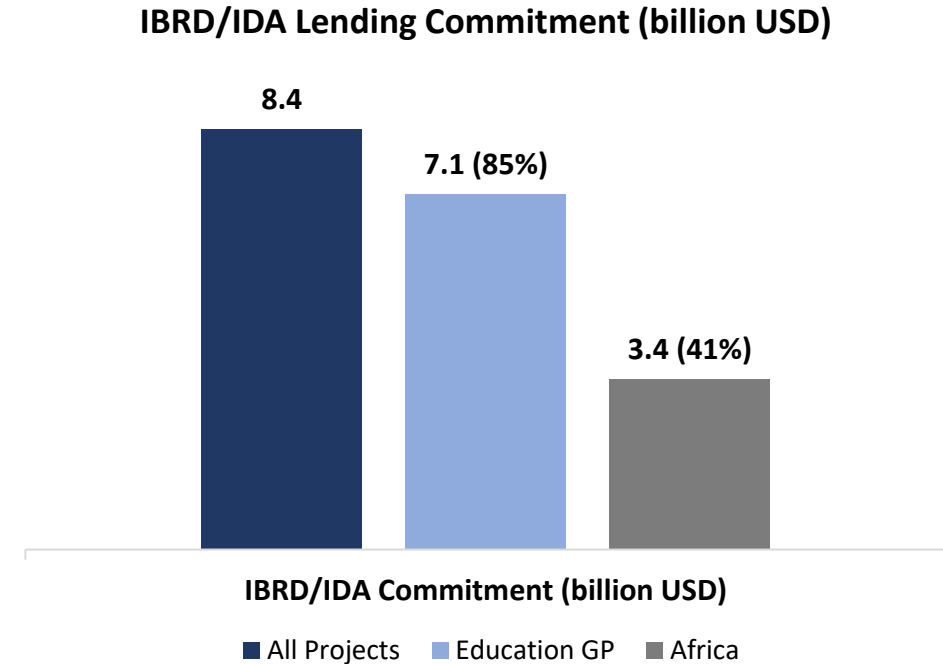
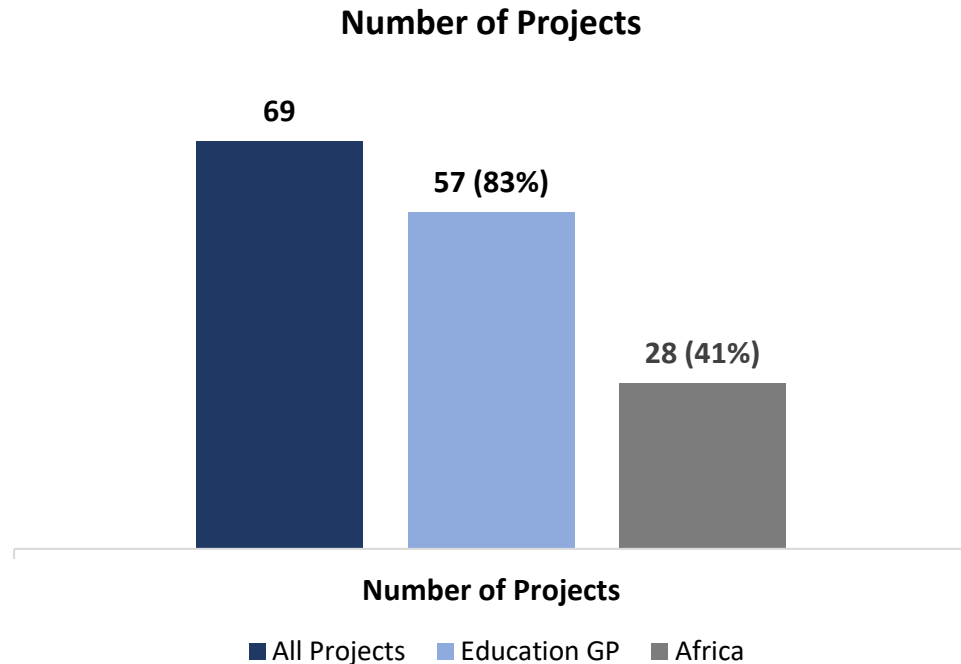


# Tertiary Education in Sub-Saharan Africa

# Overall size of TE portfolio

41 percent (US\$3.4 billion) of the global TE IBRD/IDA lending commitment is from the Africa region

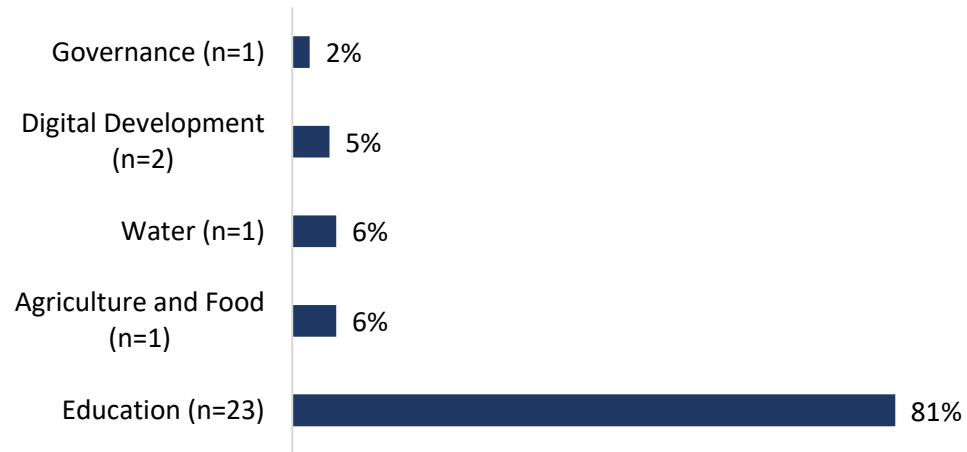


*The information is from the TE portfolio review conducted in FY 2024. Sixty-nine projects with at least one tertiary education component were selected for the analysis. These projects were approved between 2013 and 2023 and had an active status at the time of the shortlisting in September 2023.*

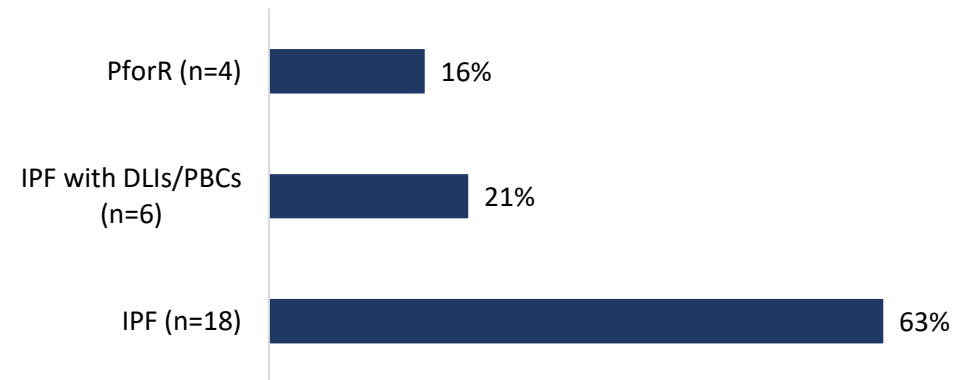
# Distribution by GPs and Lending Instruments

- In the Africa region, Education GP is implementing about 81 percent of total TE lending commitment
- IPF is the most used lending instrument for TE projects

**Distribution by GPs (million USD, %)**



**Distribution by lending instruments (million USD, %)**



# Distribution by Countries

- Cameroon, Tanzania, and Rwanda have the highest TE commitment in the Africa region
- Tanzania's Higher Education for Economic Transformation (HEET) Project has the largest commitment of US\$425 million followed by Senegal's Higher Education Project with a commitment of US\$150 million

| Country          | Number of TE Projects | Total WB financing (million USD) | % TE lending commitment of country of total TE lending commitment in Africa |
|------------------|-----------------------|----------------------------------|-----------------------------------------------------------------------------|
| Cameroon         | 3                     | 525                              | 15%                                                                         |
| Tanzania         | 1                     | 425                              | 13%                                                                         |
| Rwanda           | 3                     | 370                              | 11%                                                                         |
| Burkina Faso     | 3                     | 220                              | 6%                                                                          |
| Congo, Dem. Rep. | 1                     | 200                              | 6%                                                                          |
| Kenya            | 1                     | 200                              | 6%                                                                          |
| Malawi           | 2                     | 172                              | 5%                                                                          |
| Nigeria          | 2                     | 155                              | 5%                                                                          |
| Senegal          | 1                     | 150                              | 4%                                                                          |
| Niger            | 1                     | 140                              | 4%                                                                          |
| Mozambique       | 1                     | 104                              | 3%                                                                          |
| Cote d'Ivoire    | 1                     | 100                              | 3%                                                                          |
| Ghana            | 1                     | 97                               | 3%                                                                          |
| Somalia          | 1                     | 25                               | 1%                                                                          |

# Regional Projects

Of the total TE lending commitment in Africa, 15 percent (US\$507 million) is for Regional Projects

| Project ID | Project Name                                                                                     | Year | Region                      | Practice Area | IBRD Credit | IDA Credit | IDA Grant | Total WB Financing | Non-WB Group Financing |
|------------|--------------------------------------------------------------------------------------------------|------|-----------------------------|---------------|-------------|------------|-----------|--------------------|------------------------|
| P151847    | Eastern and Southern Africa Higher Education Centers of Excellence                               | 2016 | Eastern and Southern Africa | Education     | 0           | 140        | 8         | 148                | 0                      |
| P176744    | Additional Financing for the ACE II Project                                                      | 2022 | Eastern and Southern Africa | Education     | 0           | 20         | 50        | 70                 | 0                      |
| P164546    | First Africa Higher Education Centers of Excellence for Development Impact Project               | 2019 | Western and Central Africa  | Education     | 0           | 118.3      | 24.7      | 143                | 115.5                  |
| P169064    | Second Africa Higher Education Centers of Excellence for Development Impact                      | 2020 | Western and Central Africa  | Education     | 0           | 94         | 37        | 131                | 199.2                  |
| P165581    | Africa Regional Scholarship and Innovation Fund for Applied Sciences, Engineering and Technology | 2019 | Eastern and Southern Africa | Education     | 0           | 0          | 15        | 15                 | 9                      |

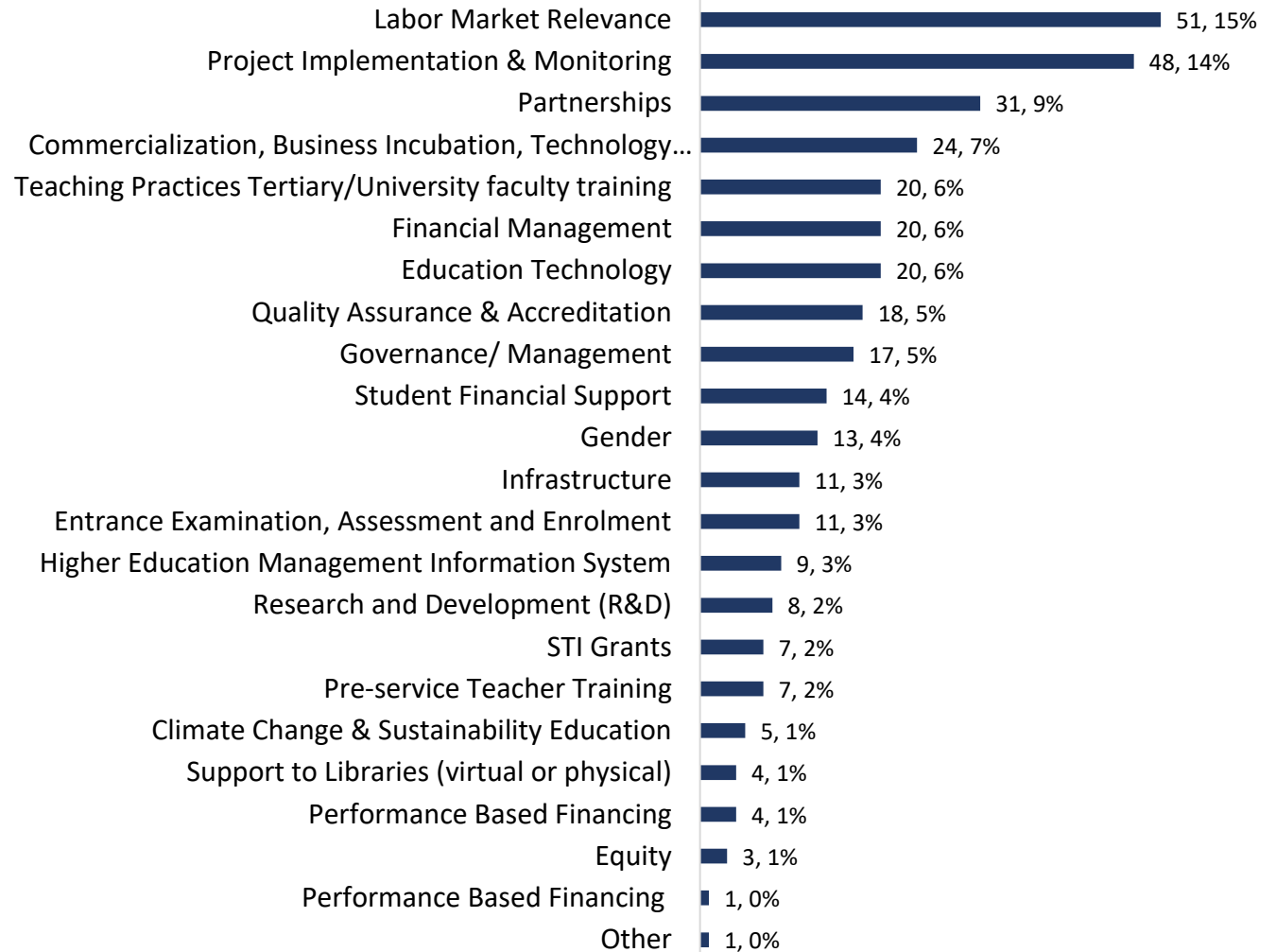
# Distribution of Project Activities by Themes

The most common TE themes that emerged from TE activities in the region are:

- Labor Market Relevance
- Partnerships
- Commercialization, Business Incubation, Technology Transfer, Patenting, Private Sector Skills Training

*Project components, sub-components, and performance-based conditions (PBCs)/Disbursement linked results (DLRs) were coded based on a TE coding framework developed through desk review and consultations with TE experts.*

*Total number of times TE codes used across TE project components and indicators for TE projects in Africa are 347.*



# The Africa Centers of Excellence Program



# AFRICA CAN! Africans solving Africa's Development Challenges

~ **77,000** students  
(6,900+ PhD, 27,800+ Masters)



~ **9,000**

Research Articles



**126**

Internationally  
accredited programs



~ **US\$ 171 million**

Revenue generated



**ACE since 2014: Championing cutting-edge research and innovation in health, ICT, climate change, agriculture and other sectors**

- **ACEPHAP (Nigeria):** Developed an intervention to address postpartum hemorrhage, which kills a mother every 7 minutes
- **ACEGID (Nigeria); SACCIDS (Tanzania):** Conduct pivotal research on genomics and surveillance of infectious diseases. At the forefront of the response to Ebola, Covid-19, Lassa fever, Monkey pox, Marburg and Leptospira outbreaks in the region.
- **ACECoR (Ghana):** Offers training and research related to the Blue Economy (including on coastal resilience) across Africa
- **WACCI (Ghana); CDA (Nigeria), CESAAM (Kenya); MaRCCI (Uganda):** Impacting agricultural productivity in the region through the development of over 200 variations of crops that are climate, disease and pest resistant
- **OAK PARK (Nigeria):** Established an Incubation Centre and ICT Garden, that has spun out several startups focused on digital animations, digital financial platforms, and telemedicine platforms
- **ACE-ESD (Rwanda):** Its Incubation Hub is supporting practical solutions such as an automatic changeover switch device, which promotes the use of solar energy and has been commercialized and sold to schools in the region
- **VALOPRO (Cote d'Ivoire):** Conducts research that develops innovative processes to transform waste into High Added Value Products
- **MITIC (Senegal):** Spearheading the Saint Louis Digital 2025 project to develop the city as an industrial center based on digital technology (smart city, e-health systems, etc).

# The ACE Objectives & Model

The Africa Centers of Excellence (ACE) program is a series of regional higher education projects that aim to **improve education, training and applied research at the post-graduate level in key priority fields**, including science, technology, engineering, mathematics (STEM), agriculture, health, industry and related fields.



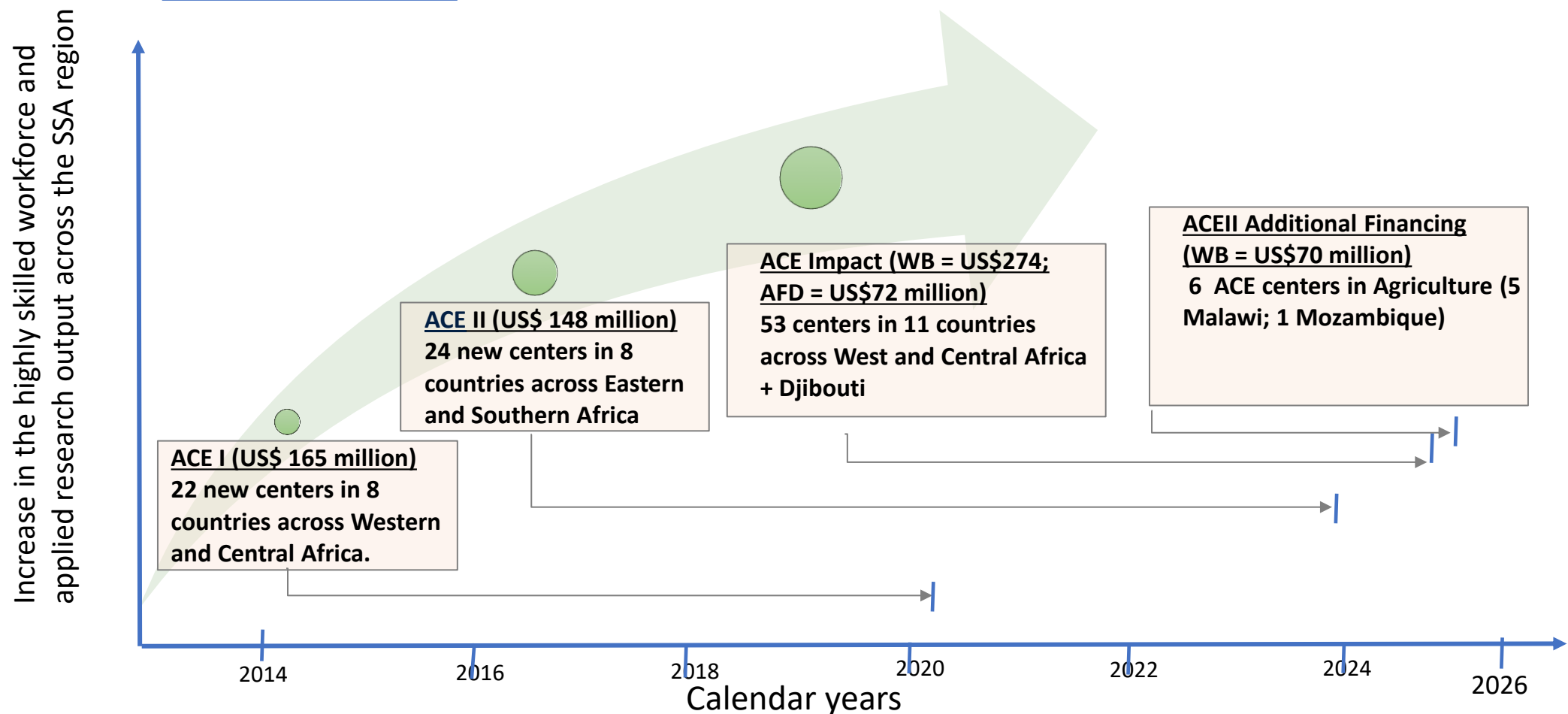
# Features of ACE I,II, ACE Impact Projects

ACE 1  
1<sup>st</sup> Regional higher ed. project at the Bank – the ACE model is designed and implemented  
- Approved in 2014

ACE II:  
- Approved in 2016  
- Regional scholarships for women  
- Funding incubators

1<sup>st</sup> & 2<sup>nd</sup> ACE Impact:  
World Bank/AFD funding  
- Approved in 2019  
- Institutional impact  
- Development Impact  
- Upfront sector engagement

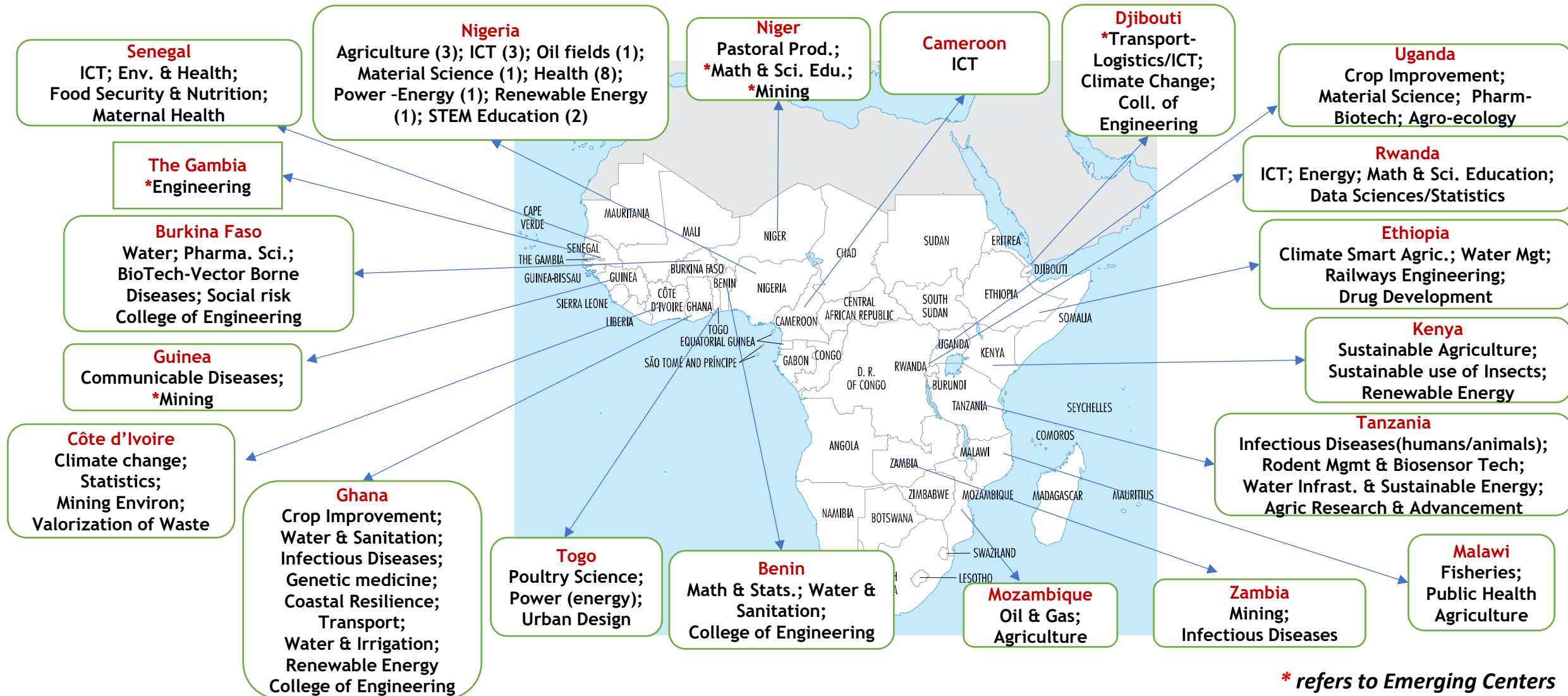
ACE II Additional financing  
- Approved in 2022  
- Strong focus on Agriculture



# ACE I, ACE II, and ACE Impact (Immense Partnership Opportunities)

80+ Centers; in 50+ universities across 20 Countries

World Bank: US\$650M    AFD: US\$72M



# ACE Series Sector Breakdown

---



20 Health Centers



21 Agriculture Centers



8 Energy Centers



7 Environment Centers



4 Mining Centers



6 Water Centers



4 Urban and Transport Centers



9 ICT centers



6 Education Centers



4 Colleges of Engineering



2 Material Science Centers



1 Social Risk Center

# ACE Regional Thematic Networks: Select Activities

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- Joint grant applications
- Joint research and publications
- Co-creation of courses
- Inter-ACE student (masters and PhD scholarships) and faculty mobility
- Hosting regional and international research symposia and partnerships
- Fostering stronger academic and industry partnerships



# Uses of Project Funds

Support to Centers & Host Universities: results-based financing

- **Student Enrolment**

- Scholarships; recruitment initiatives; student consumables;
- Developing of new programs and revamping existing ones

- **Civil Works**

- Construction of new center complexes including administrative offices, classrooms, Fablab and research laboratories and also student housing complexes
- Renovation of existing labs and upgrading core research facilities

- **Digital Transformation**

- Acquisition of Equipment for smart videoconferencing facilities (live and interactive streaming); e-learning software and Learning Management Systems (such as Sakai); e-teaching and learning support systems such as an assistive technology laboratory
- Acquisition of improved Internet connectivity, high performance computing infrastructure, computer labs

- **Research**

- Purchase of high-tech equipment for research labs, lab consumables and reagents
- Capacity building workshops for grant writing and research management
- Research subscriptions (ex. to SCOPUS), and application/publishing fees

- **Internships**

- **Innovation and Entrepreneurship**

- Funding innovation seed grants; innovation week; technology transfer offices; developing entrepreneurship courses

- **International Accreditation**

- **Communications**

- **University-level support**

- Purchase of digital procurement systems; campus-wide digital infrastructure; data systems infrastructure; developing regional strategy



# Lessons Learned

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**Results based financing** has proven to be an effective tool in incentivizing behavior change related to key objectives within higher education

---

**Ownership and collaboration** at both the institutional and national levels and strong center leadership are key factors that determine the ability of centers to reach their education targets

---

**Linkages with the private sector** are critical to knowledge transfer and integration of center graduates into their sectors. Sectoral advisory boards appear to have been an important success factor to boost the centers' engagement with the local and national economy

---

**Gender:** Expanding leadership opportunities for women at the center level leads to growth in their professional development beyond their roles at the centers. Centers institutionalizing support to female students in terms of competitive maternity leave packages, scholarships, campus housing, nurseries, etc. attract and retain female students better.

---

**Regional Connections** among various centers create a collective cognition of regional challenges and solutions leading to sustained collaborations beyond the project lifetime. The peer learning across centers and positive peer pressure aspects of the ACE program have improved results

---

**Quality of Programs and Innovation/entrepreneurship.** Quality training programs and research raise the profile of the centers and are more likely to attract other quality partners. The innovation ecosystem is weak but is key to sustainability of the centers and in attracting the private sector

---

**Digitalization.** Having a strong NREN (national research and education network) that provides access to low-priced but reliable broadband to all universities is an important driver of digitalization for teaching, research and data management

---

**Regional Facilitation Units.** E.g. The RFU for ACE Impact (AAU) cites strong improvements in the capacity of its staff (especially in project management, M&E, procurement, etc); strengthening of its fiduciary and administrative processes; and has enjoyed greater positive international visibility. .



# The Partnership for skills in Applied Sciences, Engineering and Technology (PASET)

- Regional Scholarship  
and Innovation Fund for  
Africa (RSIF)



# PASET RSIF Objectives & Thematic Areas

❖ **The Partnership for skills in Applied Sciences, Engineering and Technology (PASET) was launched in 2013 by the African Governments 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.



❖ **Its Africa Regional Scholarship and Innovation Fund for Applied Sciences, Engineering and Technology (RSIF Project, P165581)** is the first Pan-African science fund of its kind, which has been created to strengthen the institutional capacity for quality doctoral training, research and innovation in transformative technologies in Sub-Saharan Africa.

- 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.

## ❖ Priority thematic areas



Food  
security



Climate  
change



ICT including  
AI and  
Data Science



Minerals and  
Materials  
Engineering



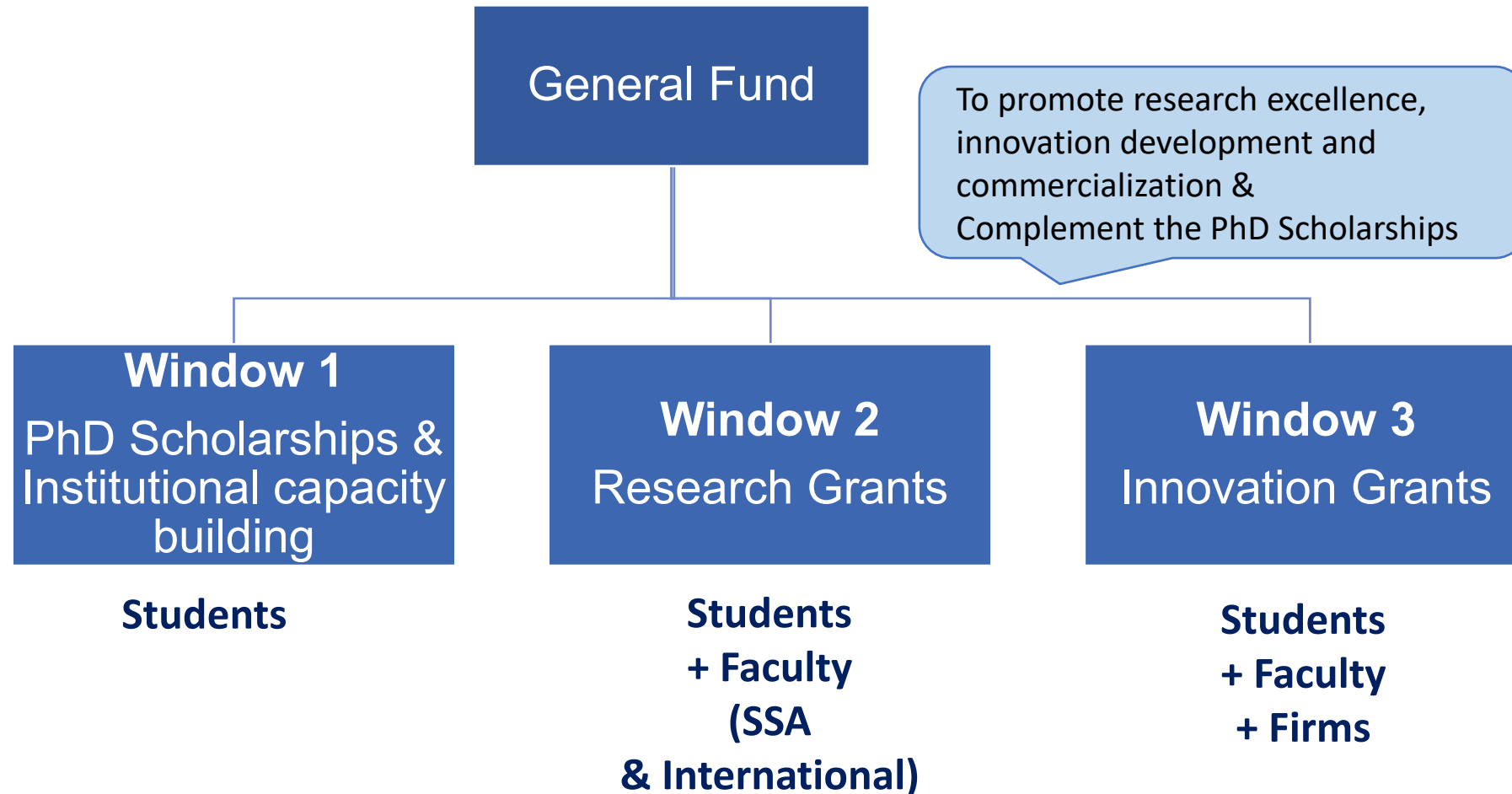
Energy

## Regional Coordination Unit



# RSIF Model

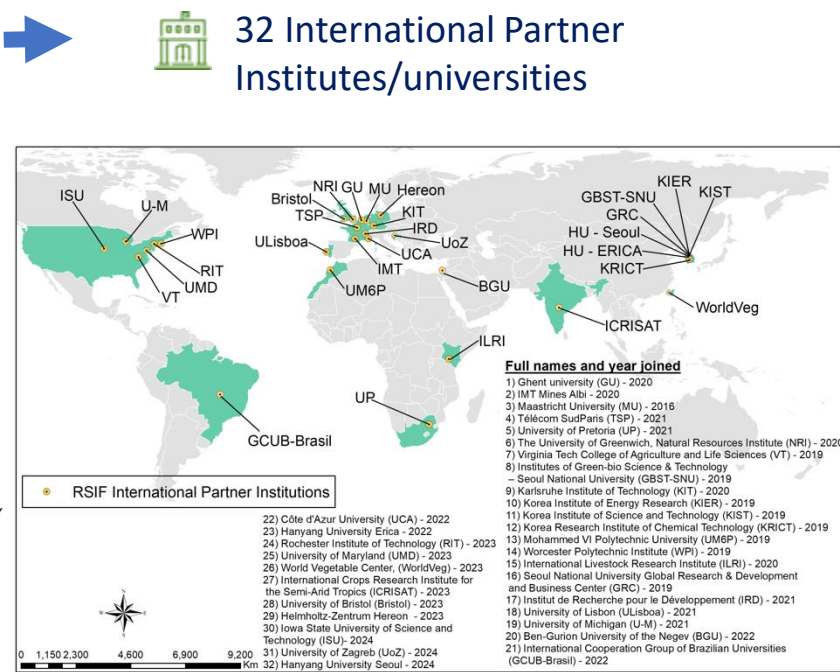
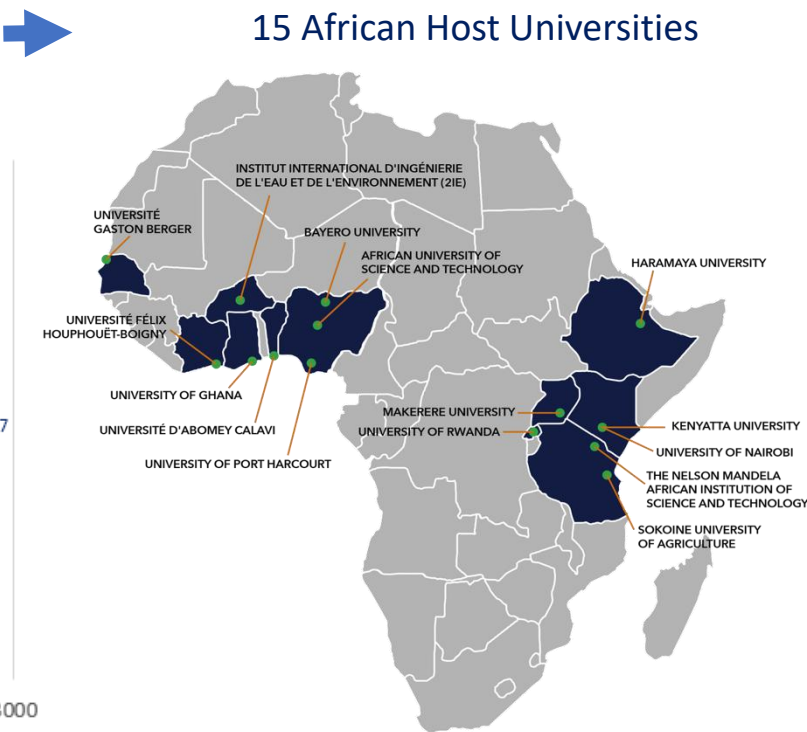
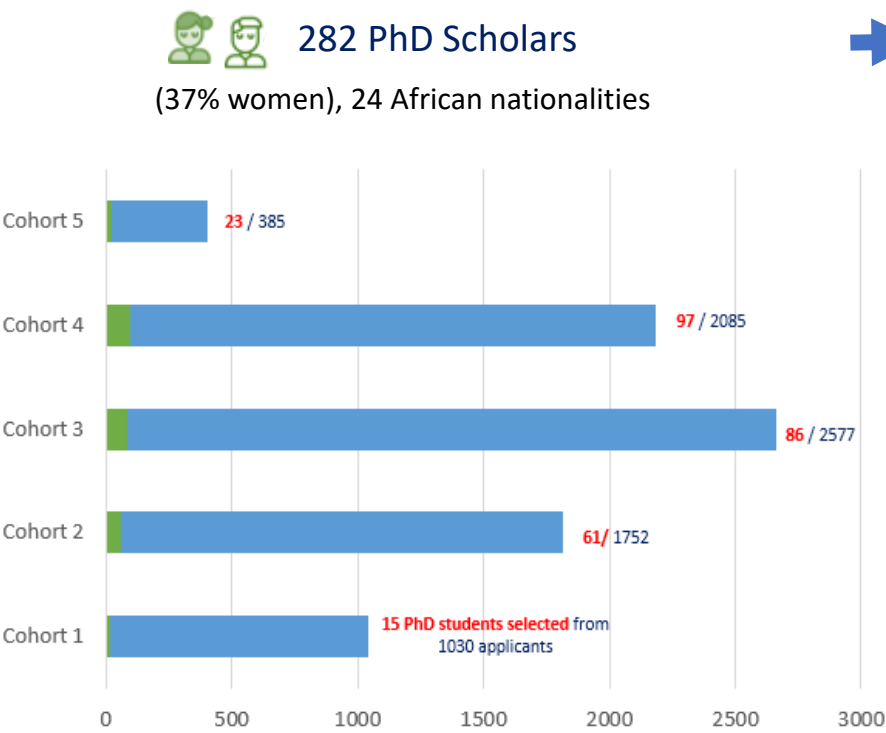
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# RSIF key achievements – PhD Scholars, AHUs and IPIs

- Highly Competitive Selection
- Ongoing Mentoring

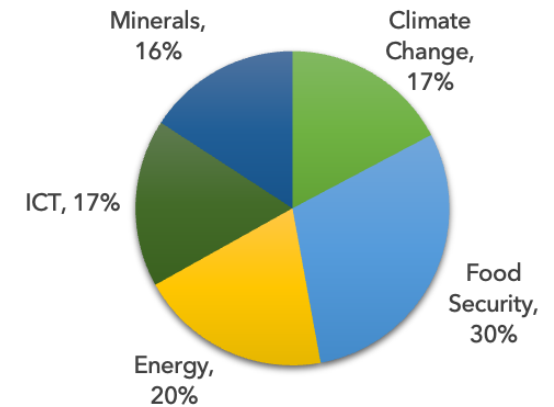
- Selective Matching
- High Level of Interaction



# RSIF key achievements – publications, research and innovation

## ❖ RSIF is already making impacts widely in the research environment in the continent

- 355 Publications (2018 to December 2024)
- 1,807 + Total citations
- 327,443+ Full text downloads
- 49,175+ Abstract views
- 0 – 19.5 Journal Impact Factor (range)



❖ 40 RSIF PhD scholars have completed their studies and are contributing to their countries – 12 of whom are female

❖ 69 Research & Innovation Projects involving 468 researchers and scientists – strengthening the research and innovation ecosystem at AHUs.

# RSIF Scholars shine



- Faith Njeru enrolled in SUA recipient of L'Oréal-UNESCO for women in science sub-Saharan Africa award 2023
- *Developing novel diagnostics to conserve Kenya's maize crops*



- Dr. Mwende Mbilo (Cohort 2), Kenya, was a recipient of L'Oréal-UNESCO for women in science sub-Saharan Africa award 2023
- *Innovating to improve solar energy solutions in Kenya*



- Dr. Emmanuel Effah (cohort 1 alumni), Ghana, was promoted from the rank of Lecturer to Senior Lecturer at University of Mines and Technology (UMaT) in Tarkwa, Ghana on 21 March 2024
- *Computer science and Engineering - Smart agri-IoT*



- Adjata Kamara, enrolled in UFHB recipient of L'Oréal-UNESCO for women in science sub-Saharan Africa award 2022, Africa Young Talents Awards
- *Biopesticides to protect yam crops, (a root that is highly prized in SSA).*



- Dr. Jean Baptiste Habinshuti (cohort 1 alumni), Rwanda, got a Post Doc position at Katholieke Universiteit, Leuven, Belgium
- *Sustainable Chemistry for Metal and Molecules*



- Dr. Theofrida Maginga (Cohort 3) Tanzania, won the prestigious Global Grand Challenge Funded by Bill and Melinda Gates Foundation
- *Develop a ChatGPT-powered Swahili chatbot for smallholder farmers to detect crop diseases*

# RSIF research & innovation projects are promising

## Prototypes Developed



AHU: UFHB, Cote d'Ivoire  
2 Biopesticides for yam fungi  
approved and registered.



AHU: Univ. of Rwanda  
2 Internet of Things (IoT) devices

- Indoor air pollution monitoring
- Smart Beekeeping



AHU: NM-AIST, Tanzania  
1 Solar heat pump dryer for  
vegetable and fruits.

## New knowledge/skills



**Patenting body:** Nigeria Patent Board  
**AHU:** University of Port Harcourt, Nigeria  
**Field:** Oil & gas  
**No. of patents:** 6

**Patenting body:** Tanzania Business Registrations and Licensing Agency (BRELA)  
**AHU:** Nelson Mandela African institute of Science & Technology (NM-AIST)  
**Field:** Food Security  
**No. of Patents:** 1



**899** faculty and scholars trained on  
entrepreneurship and innovation skills



**23** publications by faculty and scholars  
- Journal Impact range (0-7.6)