

# Africa-Europe Clusters of Research Excellence



# A new strategy for Africa-Europe science collaboration

## Africa's share of global science production is clearly insufficient.

It currently stands at just under 8 per cent, which represents considerable growth over the past 20 years, but there is still considerable potential, particularly as over 45% of Africa's science production is concentrated in South Africa and Egypt ([Sooryamoorthy 2022](#)).

Only four universities (all in South Africa) are in the global top 500 ([Times Higher, 2024](#)) – a figure all the more striking in a continent of over 1.3 billion people, whose population is expected to almost double by 2050.

## A new equitable inclusion of Africa in global science production is crucial, to:

- **Address the SDGs.** The Intergovernmental Panel on Climate Change (IPCC) has underlined that “indigenous and local knowledge” is crucial in fighting climate change. But at present, 3.8 per cent of global funding for climate research is spent on Africa, and of this small amount, 78 per cent goes to researchers outside the continent (Ziervogel et al. 2022).
- **Enable major scientific breakthroughs.** For instance, even though Africa is home to the greatest genomic variety in the world, only 2% of genomes recorded are from Africa ([Le Monde, 30/04/2023](#)). Working with African populations and scientists can dramatically improve global health.
- **More effective science funding.** Currently, development assistance often reflects donor rather than recipient priorities. In health research, for instance, 67% of deaths in low- and middle-income countries are attributable to Non-Communicable Diseases (NCDs) but they attract only 1% of total health funding. Meanwhile tuberculosis, malaria and HIV attract 39% of total funding, with only 7% of attributable deaths.

## AU-EU Innovation Agenda

In 2022, the European Union – African Union summit recognised the importance of science in the pursuit of the two Union's key strategic objectives: the AU's aspiration to become a knowledge society articulated in its Agenda 2063, and the EU's aims to address global health, climate change, and technological change through its Global Gateway.

To that end, they endorsed the AU-EU Innovation Agenda, a pioneering document that articulates the goal of science collaboration in four areas agreed between African and European governments:

1. Public Health;
2. Green Transition;
3. Innovation and Technology;
4. Capacities for Science.

The Agenda also states that joint research and innovation should be distinguished by its equity, brain circulation and capacity-building, and a long-term approach.



# Africa-Europe Clusters of Research Excellence (CoRE)

**The need for long-term and equitable research collaboration that builds up Africa's science capacity echoes an urgent call from the research sector.**

[From 2020](#), the African Research Universities Alliance (ARUA) that brings together 18 of Africa's leading Universities, and The Guild of European Research-Intensive Universities (with 21 Universities) have articulated the demand for new, long-term and equitable research partnerships.

This was echoed in 2021 by joint call demanding a significant boost to Africa's science capacities through long-term collaboration and investment. Most recently, organisations representing around [2,000 universities and research institutions](#) across Europe, Africa and beyond have called upon the EU to put the AU-EU Innovation Agenda into action, through a new integrated funding instrument fostering research excellence through collaboration and investment in research infrastructure.

**Against this background, ARUA and The Guild have created twenty Clusters of Research Excellence (CoRE) in Summer 2023.**

These address key societal and scientific challenges framed by the AU-EU Innovation Agenda, underwritten by:

## **Addressing Sustainable Development Goals**

The Clusters bring together some of the best researchers from both continents. All are committed to the change science can bring to society.

## **Scientific Excellence**

All Clusters bring together some of the leading researchers in their fields who push the frontiers of research and overcome knowledge challenges identified in close partnership.

## **Equity**

All our Clusters remain committed to achieving equity in a deeply unequal world: in the way research is carried out, credit is received, and funding allocated.

## **Inclusion**

Whilst the Clusters have been inspired by ARUA and The Guild, our Clusters bring together researchers from 160 institutions across 60 countries. Participation thus far exceeds the ARUA and Guild networks.

## **Brain Circulation and Capacity-Building**

Each Cluster is committed to developing new, inclusive models of postgraduate education. They provide a unique frame for much-needed long-term research infrastructure investment in Africa.

## **Long-Term focus**

ARUA and The Guild's university leaderships are deeply involved in the Clusters by supporting the bottom-up articulation of research priorities and by guaranteeing long-term plans with institutional support.



# Towards Equity in Global Science

The Africa-Europe CoRE address the needs of society in Africa and Europe, carried by a new spirit of partnership and collaboration.

They invite researchers in universities and research institutions in the Global North to join forces with the Global South, including policy-makers, business, and civil society as appropriate.

The Clusters also present an invitation to policy-makers and funders to develop new funding models that are more effective at addressing the real needs of society, and that bring together perspectives across the divides of an unequal world.

## To this end, we need:

- **Funders that support our ambitions and goals**, for instance the creation of innovative doctoral schools that strengthen the research capacities of Africa while providing graduates with excellent global networks and internationally recognised research output.
- **Funding for innovative, groundbreaking research practices**, including researchers in low-income countries, to ensure the full engagement of all excellent researchers – irrespective of where in Africa they are.
- **Investment in research infrastructures**, sustained by the expertise and commitment of the Africa-Europe Clusters of Research Excellence, open to all researchers (within and beyond the Clusters) who need them
- **Support for the engagement of society, business and policy-makers in Africa and Europe**, to enable our ambitions of addressing our commonly held challenges for the benefit of society.

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# Public Health

The following set of clusters are grouped into a priority area that is aligned with the AU-EU Innovation Agenda



# Translational Research in Infection, Immunity, and Inflammation

Rapid urbanisation and lifestyle changes in Sub-Saharan Africa (SSA) are transforming its disease epidemiology. The region is facing a double burden of disease: a rising prevalence of non-communicable diseases while the burden of infectious diseases (ID) and antimicrobial resistance remains high.

The host immune system plays a pivotal role in these conditions and understanding the interactions between pathogens and host immunity is critical for effective treatments and prevention. However, populations in SSA are underrepresented in immunity and ID research, despite significant genetic, epidemiological and contextual differences.

In response, this CoRE will establish a network of institutions with expertise in infection, immunity and inflammatory response; aiming to promote capacity exchange programs that boost training and research efforts, knowledge, and technology transfer among institutions and equip the region with the necessary skills to acquire evidence that informs policies to help address pressing public health challenges in the coming years.

Co-Leads	
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# Health and Migration

Migration – involving diverse movements of people within and between countries and regions, including refugees – is a key determinant of health but evidence-informed policy and programme responses to address migration and health (MH) remain limited.

In line with The Guild Position paper on health research (2022) and the AU-EU Innovation Agenda, Health and Migration CoRE addresses the key scientific challenge of MH across the AU-EU migration corridor. This corridor is associated with multiple health concerns determined by a range of structural and social factors that are experienced differently by diverse migrant groups and the communities through which they move, live and work.

The Health and Migration CoRE will develop collaborative research to generate evidence-informed, cross-country policy approaches to support good health. The focus will be on migrants and migration-impacted communities along the AU-EU migration corridor, as well as efforts towards Universal Health Coverage.

## Co-Leads

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# Health, Gender and Sexualities

The Health, Gender, and Sexualities CoRE aims to generate ground-breaking interdisciplinary research to address health disparities among gender and sexual minority populations; and integrate public health and social sciences to understand the complex interplay of social, cultural, and healthcare-related factors affecting health outcomes and access to care.

Over a 10-year period, the CoRE envisions conducting innovative research, developing interdisciplinary training, fostering international collaboration, and influencing evidence-based policy. Milestones during that period include initiating collaborative research projects, establishing a master's programme, facilitating capacity-building through a research school for doctoral students, and organising research conferences.

To promote equitable collaboration, the cluster emphasises the following priorities fostering inclusive decision-making processes, engaging in collective capacity-building, ensuring transparent communication, demonstrating cultural sensitivity, and actively working towards the decolonisation of research.

By integrating social science and public health perspectives, methods, and theories, the cluster aims to generate comprehensive insights and innovative solutions; and strengthen research capacities, foster cross-disciplinary dialogue, and address health disparities faced by gender and sexual minority populations.





# Multimorbidity

Non-communicable diseases, the leading cause of death worldwide, usually co-exist with other chronic health conditions in the same individual giving rise to multimorbidity. There is lack of data on the burden or clustering of multimorbidity at the population level, or context-specific evidence to guide integrated, optimal prevention and management of multimorbidity in sub-Saharan Africa (SSA).

The Multimorbidity CoRE will leverage digital technology and artificial intelligence to address key gaps in quantification, clustering, trend prediction and evaluation of new interventions to improve diagnostics, safety, and effectiveness of interventions for prevention, treatment, and control of multimorbidity in SSA.

To ensure sustainability, this CoRE will collaborate with governments, industry, and partner agencies to enhance training of the next generation of health care practitioners across the spectrum of patient care for multimorbidity in all partner countries. The CoRE will explore precision medicine approaches as a next-step strategy towards addressing multimorbidity in SSA.

## Co-Leads

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# Preparedness and Response to Pandemics and Shocks

Emerging and re-emerging global health threats such as severe acute respiratory syndrome (SARS), swine flu (H1N1), ZIKA, monkeypox, yellow fever, and COVID-19 have demonstrated that no system in any country is invulnerable to unexpected shocks. Moreover, there are persistent knowledge and capacity gaps regarding effective strategies for prevention, detection, response, and recovery from public health emergencies across health and especially the non-health sectors.

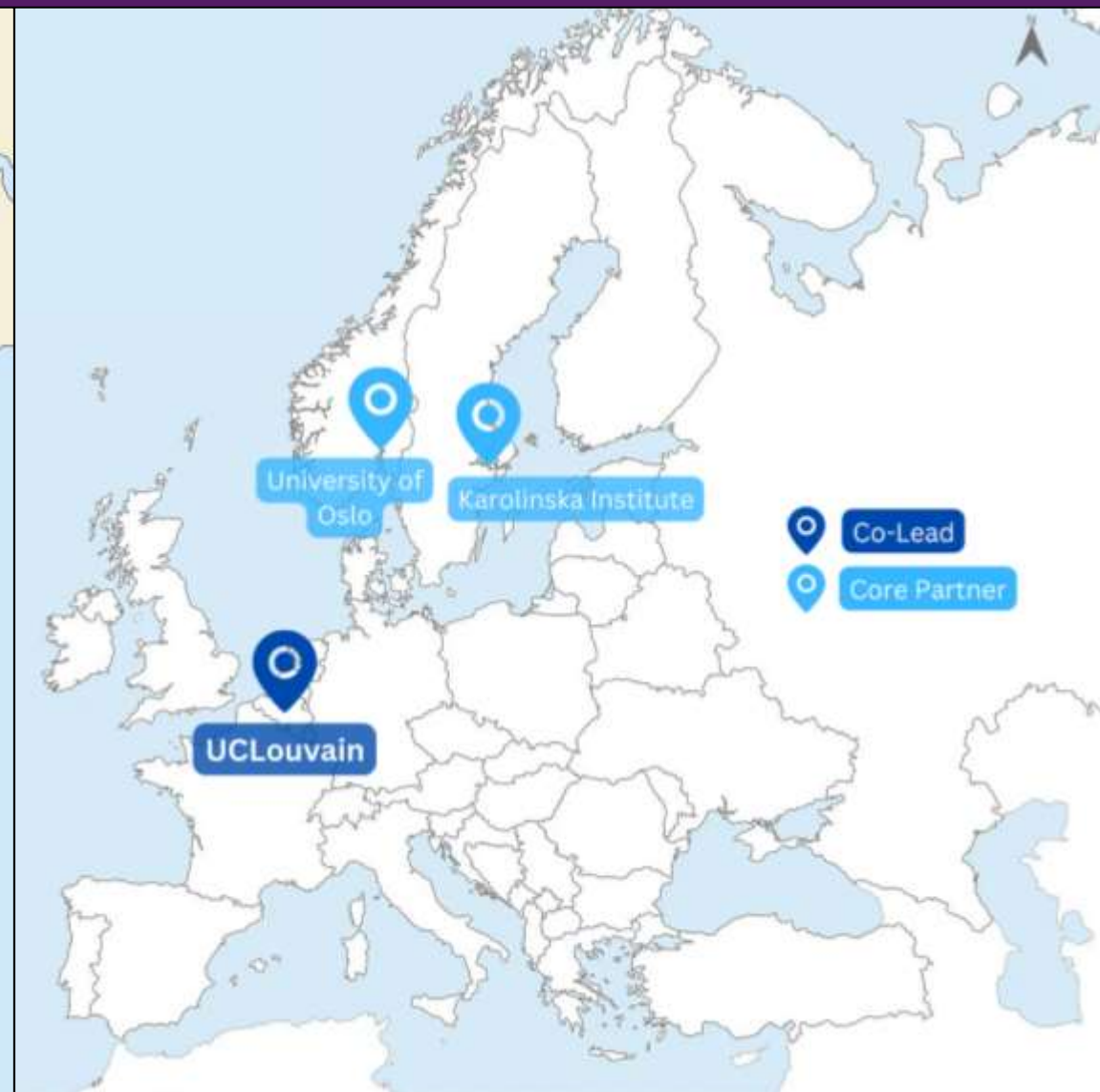
The similarities and differences in vulnerabilities and capacities across the African Union (AU) and European Union (EU) offer a great opportunity for learning and enhancing resilience across both continents.

This CoRE for Preparedness and Response to Pandemics and Shocks is uniquely positioned to harness lessons from COVID-19 and other outbreaks and shocks to ensure a multi-sectoral system resilience that addresses critical sustainable development drivers to better respond to pandemics and shocks. It will leverage technologies, innovations, expertise, and resources in the EU and AU.

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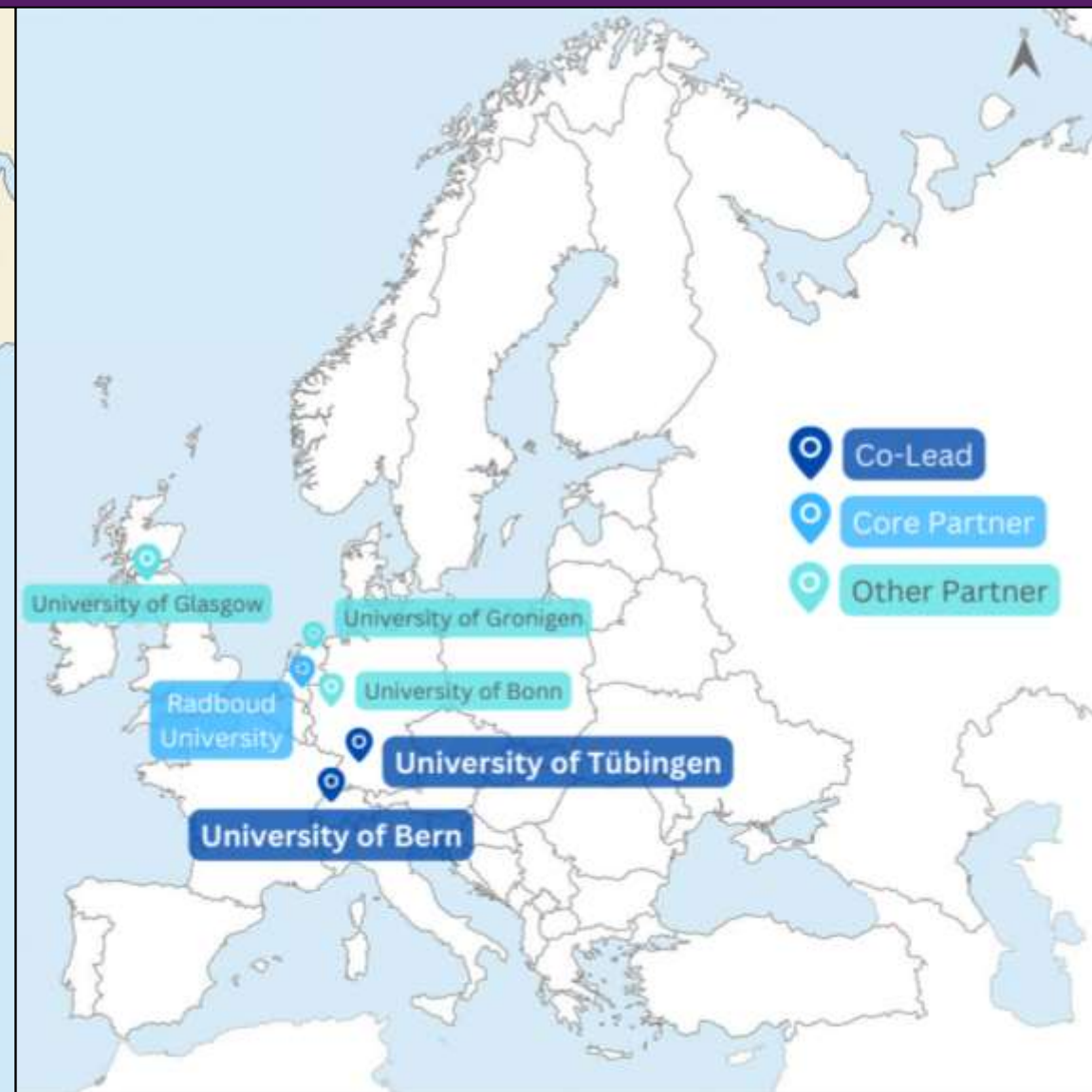
# Genomics for Health in Africa

The CoRE for Genomics for Health in Africa aims to leverage the potential of genomics to revolutionise healthcare in Africa. Genomics can provide a better understanding of rare diseases, cancers, and infections, which can lead to more effective treatments.

Combined with biochemical, biophysical, and structural analyses, genomics serves as a powerful tool for precision medicine and personalised treatment approaches. However, despite its enormous value, genomics is under-utilised in Africa due to insufficient infrastructure, resources, and scientific capacity.

This CoRE will build capacity for genomics-based diagnostics of rare diseases, cancers, and infections, coupled to investigating protein structure-function relationships and supporting optimal drug treatment and vaccine development. It will provide a unique and open platform to the African research community, to exploit the full potential of genomics coupled to protein structure function studies, as a fundamental tool to revolutionise public healthcare for both infectious and rare non-communicable diseases.





# Food Environment Actions for the Promotion of Health

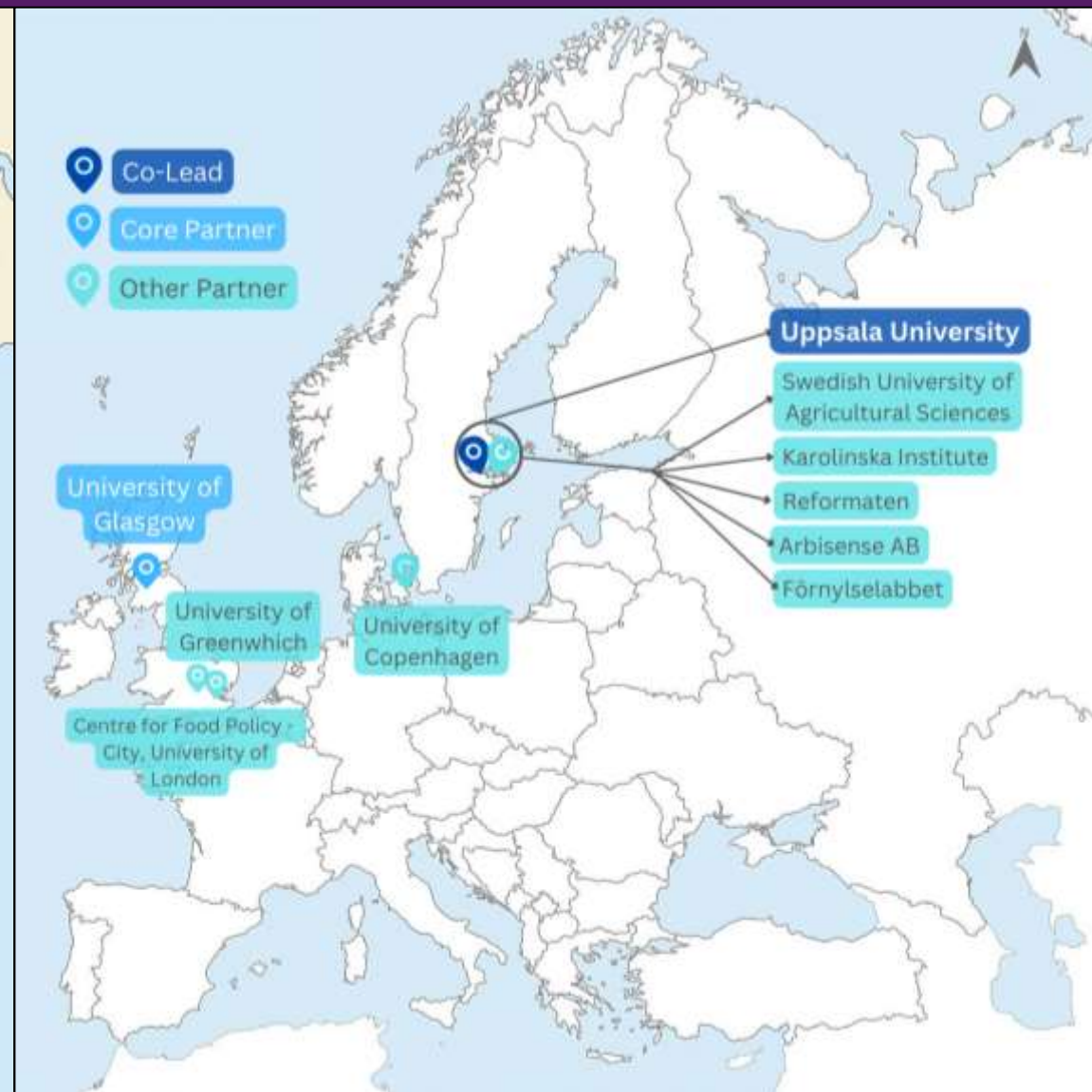
The triple burden of malnutrition is a critical global health challenge driven by intersecting processes, including urbanisation, food systems transformation and socio-economic inequalities.

This CoRE comprises three core ARUA institutions, two core institutions from The Guild and other public, private and nongovernmental organisation from both Africa and Europe. It seeks to advance the study of food environments through cutting-edge research, develop the next generation of scholars through an equitable capacity-building programme with support for early career researchers and engage in collaborative research, education and policy-related activities to enhance food environments.

The disciplinary and sectoral diversity represented by this CoRE supports local research and engagement, while at the same time developing collaborative engagement to understand food environment drivers and their implications for planetary and human health.

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<p><b><u>University of Glasgow, UK</u></b>  <b>Graeme Young</b> - Lecturer in Social and Public Policy (Urban Studies)</p>	<p><b><u>University of Cape Town, South Africa</u></b>  <b>Peter Delobelle</b> – Chief Research Officer</p>
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# Advanced Infectious Diseases Research and Training

This CoRE will tackle the next frontiers in infectious disease (ID) research in an equitable partnership. Their overarching goal is to understand the fundamental biology of pathogens and of infections, and to inform drug and intervention discovery and development.

ID pathogens have divergent biology and complex interactions with their host and the environment. Meaningful progress towards disease control necessitates an integrated and multidimensional understanding that can only be achieved in a partnership of complementary and synergistic expertise that our Cluster embodies.

Further, the under-representation of researchers based in Africa in the field's global leadership, and their limited access to cutting-edge technologies, form major barriers for significant leaps in progress as many IDs are endemic in Africa.

This CoRE will overturn this damaging inequality, through an equitable and open revolving door model for training in existing skills, and through simultaneously establishing novel technologies in partnership between ATG scientists.

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# Non-Communicable Diseases and Multimorbidity

While Europe is in the post-epidemiological transition phase, with chronic diseases still the leading cause of death, but with slowly decreasing incidence and mortality rates, Africa is still in the epidemiological transition phase with chronic diseases becoming the leading cause of death.

The CoRE in Non-Communicable Diseases and Multimorbidity aims to address the growing burden of non-communicable diseases (NCDs) and their co-morbidities in Africa. The Cluster's mission is to develop innovative and context-specific solutions for the study, prevention and management of NCDs and their co-morbidities in low- and middle-income countries. The Cluster will focus on building research capacity, conducting cutting-edge research, and promoting knowledge translation and dissemination, as well as mobility and exchanges. The Cluster's approach is multi-disciplinary, collaborative, and participatory, with a focus on equitable partnerships and community engagement. Further, Africa provides an opportunity for the global scientific community in understanding the complex NCD mechanisms as well as getting solutions to the rising NCD problem in the region.

The Cluster's goal is to improve the health and well-being of populations in Africa by reducing the burden of NCDs and co-morbidities across the lifespan and to contribute to the attainment of the Sustainable Development Goals.

Co-Leads	
ARUA	The Guild
<p><b><u>University of Nairobi, Kenya</u></b>  <b>Frederick Bukachi</b> - Director of ARUA Centre of Excellence for NCDs</p>	<p><b><u>University of Glasgow, UK</u></b>  <b>Pasquale Maffia</b> – Prof. of Cardiovascular Immunology; International Lead School of Infection &amp; Immunity</p>
<p><b><u>Cheikh Anta Diop University, Senegal</u></b>  <b>Ibrahima Bara Diop</b> - Head of Cardiology at Fann Hospital, Dakar; Professor of Cardiology</p>	<p><b><u>University of Cape Town, South Africa</u></b>  <b>Ntobeko Ntusi</b> - Professor of Medicine, Department of Medicine; Groote Schuur Hospital</p>
<p><b><u>University of Ibadan, Nigeria</u></b>  <b>Mayowa Ojo Owolabi</b> - Professor of Neurology; Director of Center for Genomic and Precision Medicine</p>	<p><b><u>Jagiellonian University, Poland</u></b>  <b>Tomasz J. Guzik</b> - Professor of Medicine</p>
<p><b><u>Université Paris Cité, France</u></b>  <b>Xavier Jouven</b> - Professor of Cardiology and Head of Cardiology at Georges Pompidou Hospital, Paris; Director of the “Epidemiology of Cardiovascular Diseases” research unit at INSERM PARCC</p>	
Core Partners	
<p><b><u>University of Ghana, Ghana</u></b>  <b>Ama de-Graft Aikins</b> - Professor of Psychology</p>	<p><b><u>University of Witwatersrand, South Africa</u></b>  <b>Maria Papathanasopoulos</b> - Professor</p>
<p><b><u>Makerere University, Uganda</u></b>  <b>Damalie Nakanjako</b> – Professor of Medicine; Principal of College of Health Sciences</p>	<p><b><u>University of Lagos, Nigeria</u></b>  <b>Oluyemi Akinloye</b> - Professor of Clinical Chemistry and Molecular Diagnosis; Director at Centre for Genomics of Non-communicable Diseases and Personalized Healthcare</p>
<p><b><u>University of Rwanda, Rwanda</u></b>  <b>Fidèle Sebera</b> - Professor of Neurology; Head of Neurology at Neuropsychiatric Hospital Ndera</p>	<p><b><u>University of Bern, Switzerland</u></b>  <b>Prof. Stephan Windecker</b> – Chairman for Dept. of Cardiology, Bern University Hospital</p>









# Green Transition

The following set of clusters are grouped into a priority area that is aligned with the AU-EU Innovation Agenda



## Co-Leads

### ARUA

#### University of Cape Town, South Africa

**Professor Mark New** - Director of African Climate and Development Initiative  
**Dr. Petra Holden** – Researcher at African Climate and Development Initiative

#### Stellenbosch University, South Africa

**Professor Guy Midgley** - Director, School for Climate Studies

### The Guild

#### University of Bologna, Italy

**Professor Silvana Di Sabatino** - PhD Coord. “Future Earth, Climate Change and Societal Challenges”; Atmospheric Physics Res. Group Coord.

## Core Partners

#### University of Glasgow, UK

**Prof. Fabrice Renaud**  
**Prof. Simon McGrath // Dr. MD Sarwar Sohel**

#### University of Göttingen, Germany

**Prof. Dr. Reimund P. Rötter**  
**Prof. Dr. Bernhard Bruemmer**

#### Makerere University, Uganda

**Dr. John Bosco Insuju**

#### University of Pretoria, South Africa

**Prof. Veronica Ueckermann**  
**Prof. Marietjie Venter // Dr. Maryke de Villier**  
**Dr. Johan Steyl // Prof. Abel Ramoelo**

#### University of Nairobi, Kenya

**Prof. Daniel Ochieng Olago**  
**Prof. Ouma Gilbert Ong’isa**  
**Mr. Ames Otieno Kaoga**  
**Dr. Ongoro Eunice**

#### University of Witwatersrand, South Africa

**Prof. Sally Archibald**  
**Prof. Francois Engelbrecht**

#### University of Cape Town, South Africa

**Dr. Petra Holden // Dr. Jasper Slingsby**  
**Prof. Gina Zier Vogel // Dr. Anna Taylor**  
**Prof. Adam West // Prof. Lindsey Gilson**  
**Dr. Chris Trisos // Dr. Vernon Visser**  
**Dr. Andreas Meyer // Dr. Gylnis Humphrey**

#### Stellenbosch University, South Africa

**Prof. Kanshu Rajuratnam**  
**Prof. Tulio de Oliveira // Prof. Nox Makunga**  
**Dr. Lokotola Lueme // Prof. Pedro Monteiro**  
**Prof. S vd Heyden // Prof. S Clusella-Trullas**  
**Dr. Andrew Watson // Dr. Heath Beckett**

#### University of Ghana, Ghana

**Dr. Kwasi Appeaning Addo**  
**Prof. Christopher Gordon**  
**Dr. Adelina Maria Mensah**

#### University of Bologna, Italy

**Dr. Laura S. Leo // Dr. Paolo Ruggieri // Dr. Salvatore Pascale**  
**Prof. Igor Diemberger // Prof. Alessandra Scagliarini**  
**Prof. Valerio Carelli**

#### Rhodes University, South Africa

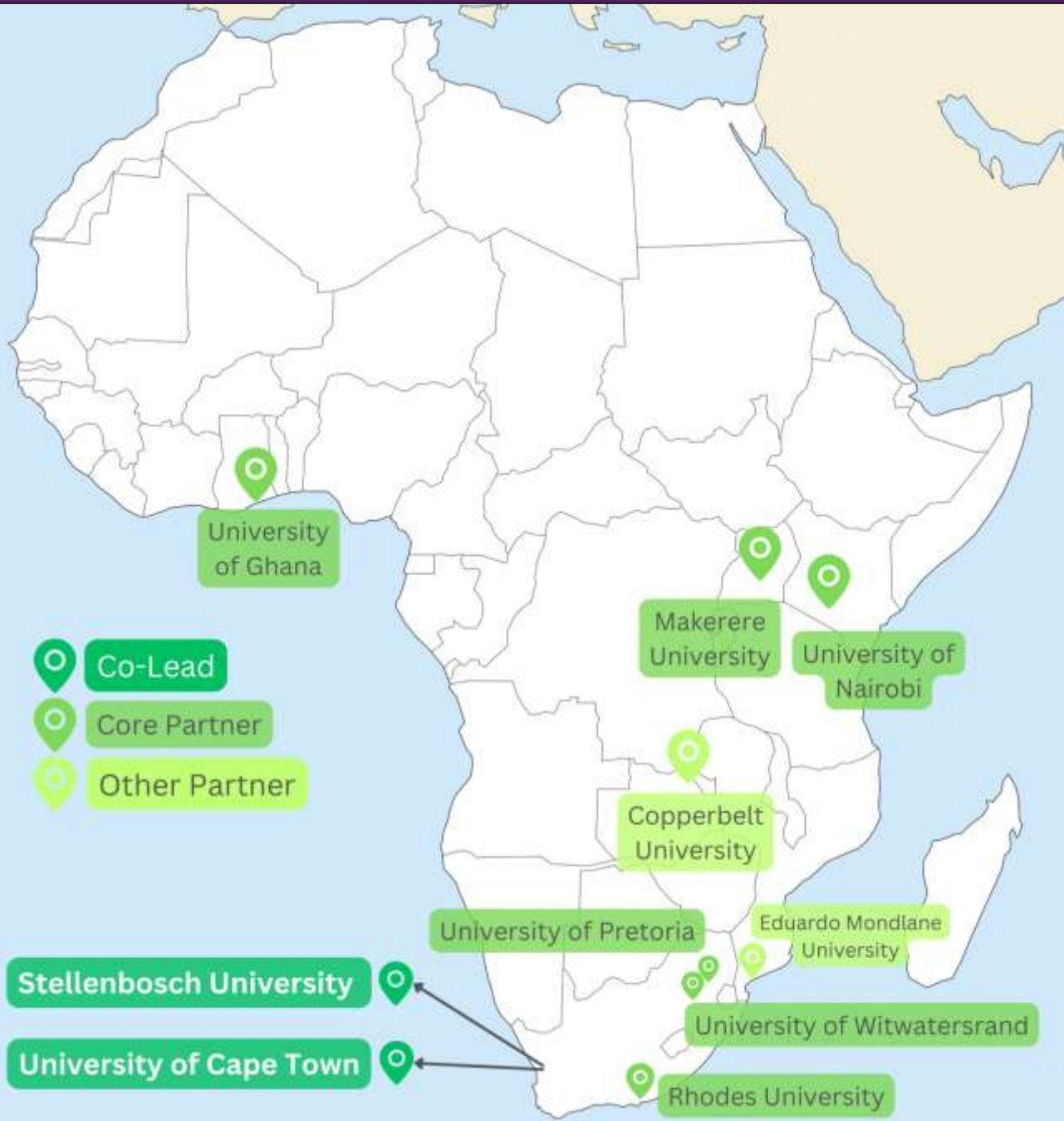
**Prof. Heila Lotz-Sisitka // Prof. Brad Ripley**  
**Prof. Susanne Vetter // Prof. Nelson Odume**  
**Dr. Chika Nnadozie**

## Nature-based Solutions for Climate Change Adaptation and Mitigation

As recognised in the IPCC AR6 report, Africa and Europe are highly vulnerable to climate variability and change, with consequences for heat-related morbidity and mortality, biodiversity loss, reduced food production, and water scarcity. To reduce risks associated with climate change and to safeguard economic development, transdisciplinary research and adaptation measures based on nature-based solutions are urgently needed.

Here, through the Africa-Europe Cluster of Research Excellence (CoRE) on Nature-based Solutions for Climate Change Adaptation and Mitigation, we propose to build a multi- and transdisciplinary research capacity and network between European and African academic and research institutions with the following long-term ambitious objectives: (1) to establish a climate service hub for Africa, (2) to develop a NbS innovation hub, (3) to implement innovative NbS adaptation and mitigation measures, and (4) to establish a training infrastructure promoting the creation of doctoral networks and educational activities to promote cultural and educational exchanges between European and African universities.





# Renewable Energy

This CoRE is intended to facilitate a long-term sustainable transition toward a sustainable energy system. This global challenge will only be solved by a collaborative and multidisciplinary approach, which this Cluster actively pursues.

The three pillars around which the Cluster is built, are technology development, equitable societal transition, and sustainable education and training. The Cluster will consist of 6 CoRE members: 3 ARUA Universities (Stellenbosch University as African lead and host of the ARUA CoE in Energy, and the Universities of Ghana and Makerere) and 3 Guild Universities (Ghent University as European lead, and Universities of Oslo and Groningen). Non-CoRE members will participate to increase impact, when feasible.

The CoRE will be able to mobilise quickly and have a significant impact due to substantial support from the member institutions, the significant existing research infrastructure and the widespread networks of the members.

Co-Leads	
ARUA	The Guild
<p><b><u>Stellenbosch University, South Africa</u></b> Neill Goosen - Director ARUA CoE in Energy</p>	<p><b><u>University of Ghent, Belgium</u></b> Michel de Paepe - Promotor, spokesperson for EnerGhentIC</p>
Core Partners	
<p><b><u>Makerere University, Uganda</u></b> Prof John Mango Magero, et al. - Deputy Principal, College of Natural Sciences</p>	<p><b><u>University of Ghana, Ghana</u></b> Prof. David Dodoo-Arhin et al. – Director of the Institute of Applied Science and Technology &amp; Head, Banga Africa Energy and Hybrid Materials Research Laboratory</p>
<p><b><u>University of Groningen, The Netherlands</u></b> Prof. Lorenzo Squintani - Director of the Wubbo Ockels School for Energy and Climate</p>	<p><b><u>University of Oslo, Norway</u></b> Prof. Øystein Prytz, et al. - Centre leader Centre for Materials Science and Nanotechnology, Professor at the Department of Physics</p>





# Sustainable Water and Land Resource Management for Human Well-Being

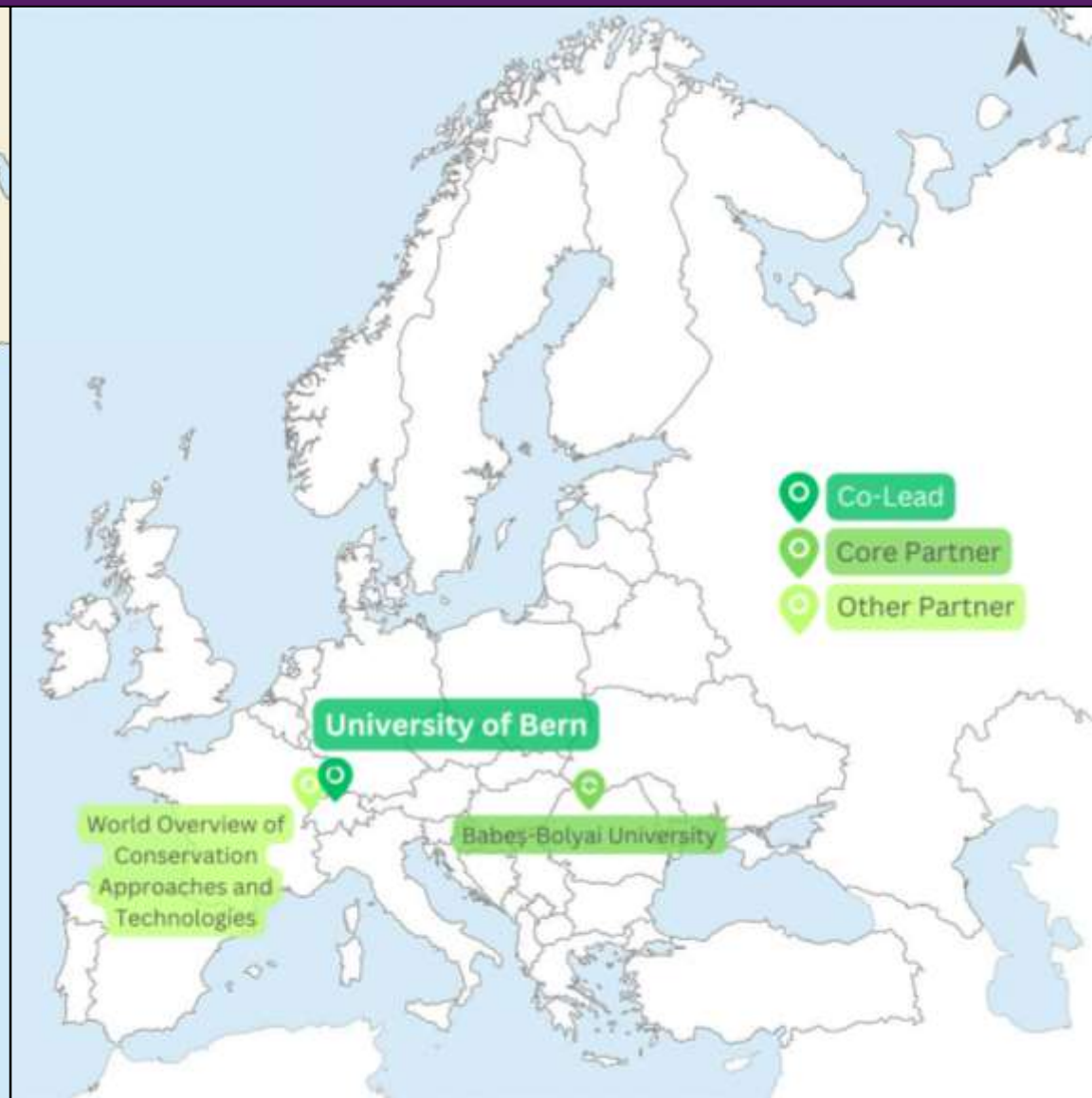
Land degradation, associated conflicts, and climate change are global development challenges that particularly affect African countries. Progress in combating land degradation is lagging expectations and was further slowed by the Covid-19 pandemic. This calls for urgent responses and sustainable actions that go beyond business-as-usual practices.

The overarching goal of this CoRE is to link key research partners in sustainable water and land resource management with partners from policy and practice. Together, these teams would address land degradation to foster sustainable development, conflict resolution, and human well-being. Taking care of land, water – and, in particular, the long-term health of ecosystems and landscapes – is fundamental to ensuring food security, to building resilience to climate change and pandemics, and to supporting sustainable livelihoods. This CoRE contributes mainly to the “Green Transition” priority area, and partly to “Innovation and Technology” and “Capacities for Science”.

Co-Leads	
ARUA	The Guild
<p><b><u>Addis Ababa University, Ethiopia</u></b></p> <p><b>Gete Zeleke</b> - Director Water and Land Resource Centre (WLRC)</p>	<p><b><u>University of Bern, Switzerland</u></b></p> <p><b>Prof. Dr. Thomas Breu</b> - Director CDE (Centre for Development and Environment)</p>
Core Partners	
<p><b><u>Rhodes University, South Africa</u></b></p> <p><b>Dr. Jane Tanner</b> - Head of Hydrology</p>	<p><b><u>University of Nairobi, Kenya</u></b></p> <p><b>Dr. Boniface Wambua, et al.</b> - Chairman of Department of Geography, Population and Environmental Studies</p>
<p><b><u>Babeş-Bolyai University, Romania</u></b></p> <p><b>Prof. Dr. Sergiu Mişcoiu</b> - Director of the Centre for African Studies</p>	<p><b><u>Cheikh Anta Diop University, Senegal</u></b></p> <p><b>Dr. Mamadou Bouna Timéra</b> - Assesseur de la Faculté des Lettres et Sciences Humaines</p>







## Co-Leads

ARUA	The Guild
<p><b><u>Rhodes University, South Africa</u></b> Dr. Jane Tanner et al. - Director ARUA Water CoE</p>	<p><b><u>University of Ljubljana, Slovenia</u></b> Prof. Barbara Hribar Lee - Professor of Physical Chemistry</p>

## Core Partners

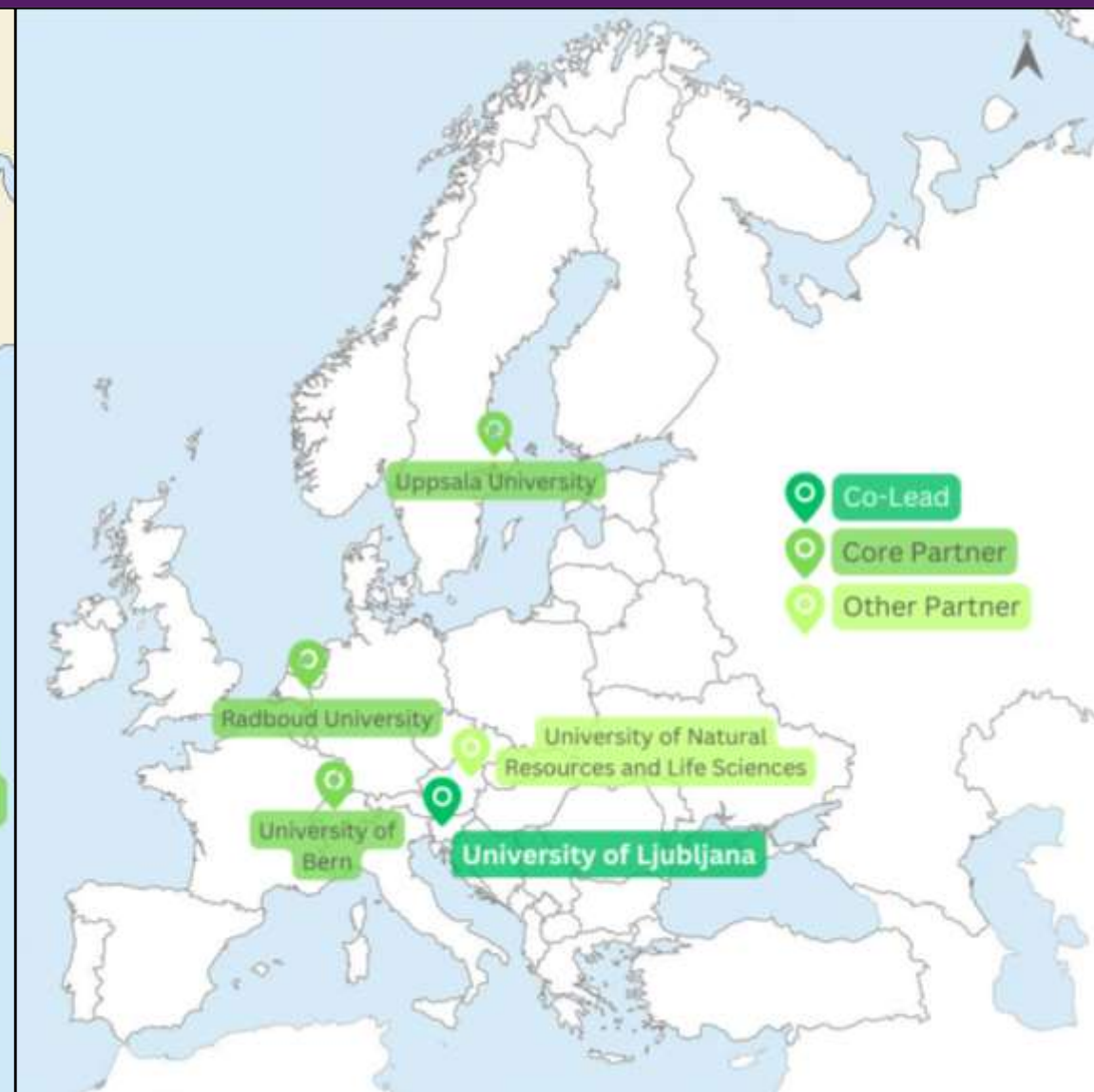
<p><b><u>Addis Ababa University, Ethiopia</u></b> Tadesse Fetahi, et al. - Research Director and coordinator of a joint MSc Program Aquatic Ecosystem and Environmental Management (AEEM)</p>	<p><b><u>University of Ibadan, Nigeria</u></b> Prof. Ayodele Samuel Jegede - Medical Sociology/Anthropology and Bioethics, Dept. of Sociology, Faculty of the Social Sciences</p>
<p><b><u>University of Rwanda, Rwanda</u></b> Dr. Venuste Nsengimana - Deputy Director of the Center of Excellence in Biodiversity and Natural Resource Management (CoEB)</p>	<p><b><u>Makerere University, Uganda</u></b> Assoc. Prof. George Nyakairu, et al. - Department of Chemistry, College of Natural Science</p>
<p><b><u>Cheikh Anta Diop University, Senegal</u></b> Prof. Serigne Faye - Head of the Water Doctoral School EDEQUE</p>	<p><b><u>University of Dar Es Salaam, Tanzania</u></b> Dr. Augustina Alexander, et al. - Department of Water Resources Engineering</p>
<p><b><u>University of Lagos, Nigeria</u></b> Prof Ezechiel OLonge, et al. - Department of Civil and Environmental Engineering</p>	<p><b><u>University of Bern, Switzerland</u></b> Prof. Dr. Thomas Breu - Director CDE (Centre for Development and Environment)</p>
<p><b><u>Radboud University, The Netherlands</u></b> Dr. Stjepan Picsek</p>	<p><b><u>Uppsala University, Sweden</u></b> Dr. Martin Mickelsson</p>
<p><b><u>University of Cape Town, South Africa</u></b> Assoc. Prof. Kirsty Carden, et al.</p>	

## Water Resources Management for a Sustainable and Just Future

The global landscape for management of our water resources is changing. Increasing demand, industrialisation, climate change and increasing entwining of social and ecological systems means traditional water resource management (WRM) is not meeting the challenges of our changing environments. Furthermore, disconnects between science and practice, means innovative research and technological advances often don't translate to practical WRM.

Decisions about future WRM are therefore highly uncertain, increasing risks and vulnerability for people and environment. Research is needed to consider existing governance and policy gaps, challenges with conventional approaches to WRM, technological innovations, peoples' relations regarding water, and future potential water related risks. Future WRM needs to be transformative in order to become sustainable and have relevance for Africa and Europe. This Africa-Europe Cluster of Research Excellence (CoRE) focuses on exploring different solutions, learning opportunities/exchanges and pathways to innovation, policy and investment in WRM in Africa and Europe, and solutions that build long-term meaningful capacity within WRM.







# Innovation & Technology

The following set of clusters are grouped into a priority area that is aligned with the AU-EU Innovation Agenda



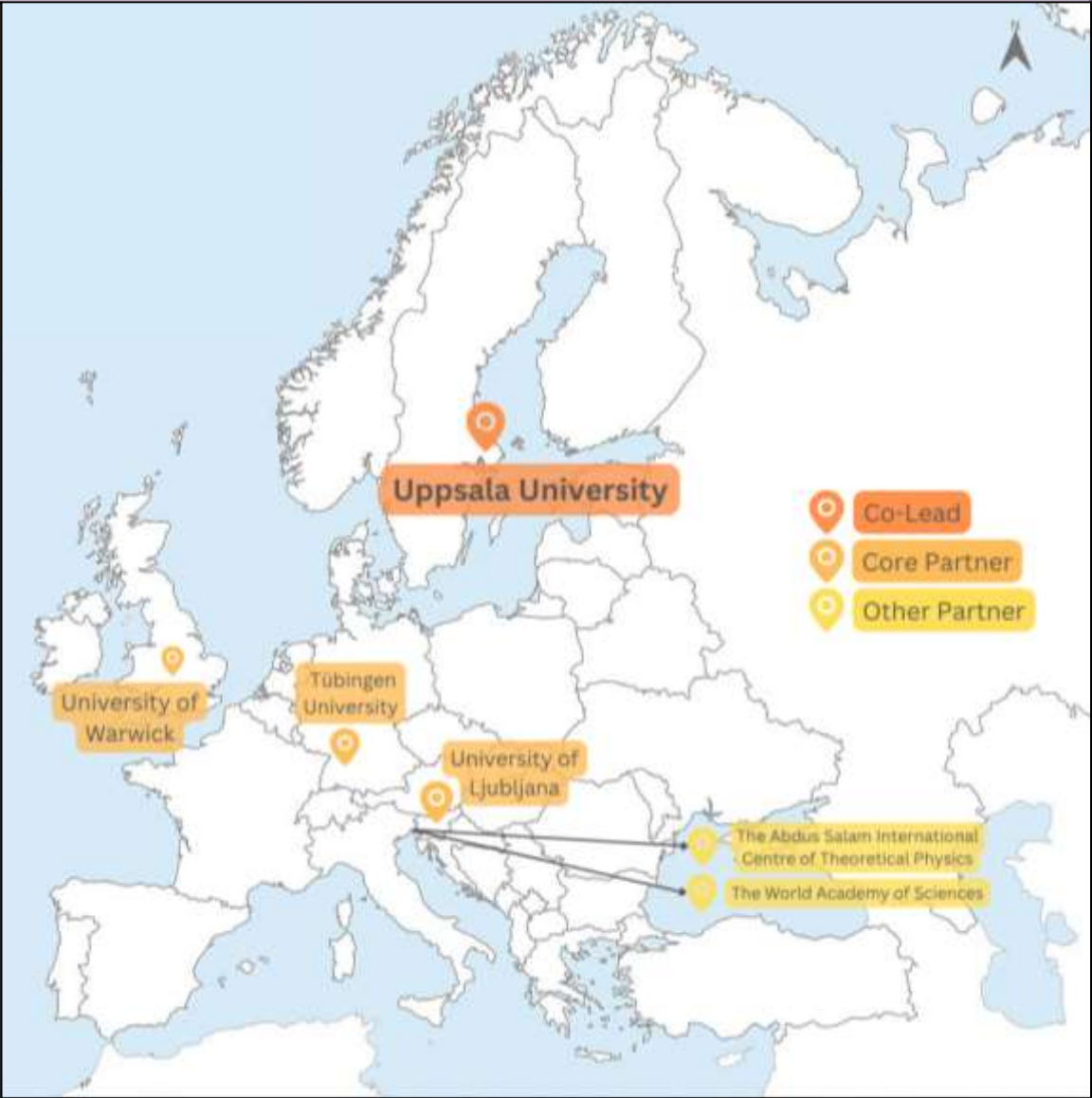
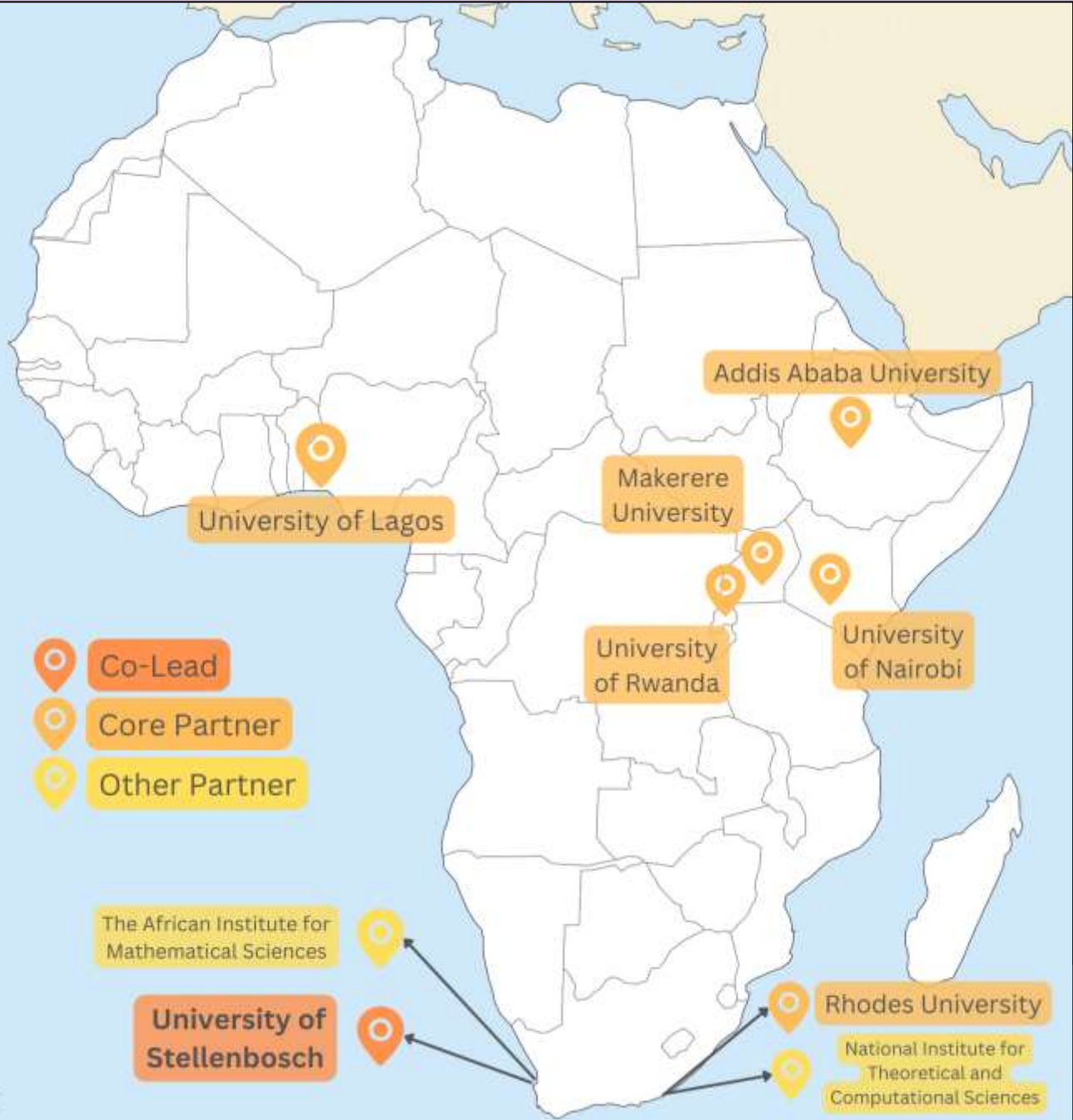
# Artificial Intelligence, Data Science, and Theoretical and Computational Thinking

Artificial Intelligence (AI) methods have become powerful tools for addressing societal challenges in almost all areas of life. This development is fuelled by improved connectivity, increased computational power, and data access. Applications of AI will play an essential role in achieving many of the Sustainable Development Goals (SDGs) by tackling problems in a multitude of areas, like climate change, food security, education, public health, access to energy and clean water, and, in the areas in the social sciences and humanities, social justice to name a few.

While the SDGs and many connected societal challenges are global, the capacity for utilising AI methods and research in AI and Data Science still needs to be improved in Africa. The goal of the Cluster is to strengthen the capabilities for research and postgraduate training in these areas at key universities in Africa and initiate research projects in areas of global relevance.

Co-Leads	
ARUA	The Guild
<p><b><u>Stellensbosch University, South Africa</u></b></p> <p><b>Francesco Petruccione</b> - Professor of Quantum Computing and Director at National Institute for Theoretical and Computational Science</p>	<p><b><u>Uppsala University, Sweden</u></b></p> <p><b>Thomas Schön</b> – Beijer, Professor in Artificial Intelligence</p>
Core Partners	
<p><b><u>Addis Ababa University, Ethiopia</u></b></p> <p><b>Solomon Gizaw</b> - Head of Computational Data Science</p>	<p><b><u>Makerere University, Uganda</u></b></p> <p><b>Prof. John Magero Mango, et al.</b></p>
<p><b><u>University of Lagos, Nigeria</u></b></p> <p><b>Victor Odumuyiwa, et al.</b> – Director of NITDA IT Hub</p>	<p><b><u>University of Nairobi, Kenya</u></b></p> <p><b>Prof. Patrick Weke</b></p>
<p><b><u>University of Ljubljana, Slovenia</u></b></p> <p><b>Aleksander Sadikov</b> - Head of the AI Laboratory</p>	<p><b><u>University of Tübingen, Germany</u></b></p> <p><b>Prof. Philipp Berens</b></p>
<p><b><u>University of Rwanda, Rwanda</u></b></p> <p><b>Denis Ndanguza</b> - Professor and Dean of the School of Science</p>	<p><b><u>University of Warwick, UK</u></b></p> <p><b>Professor Olalekan Uthman</b> – Director of Warwick Centre for Global Health</p>
<p><b><u>Rhodes University, South Africa</u></b></p> <p><b>Ozlem Tastan Bishop</b> - Professor and Director of Research Unit in Bioinformatics (RUBi)</p>	





## Co-Leads

ARUA	The Guild
<p><b><u>University of Pretoria, South Africa</u></b>  <b>Prof. Frans Swanepoel</b> - Interim Director ARUA Centre of Excellence in Sustainable Food Systems</p>	<p><b><u>University of Bologna, Italy</u></b>  <b>Prof. Luca Fontanesi</b> - Professor of Agricultural and Food Sciences</p>

## Core Partners

<p><b><u>University of Warwick, UK</u></b>  <b>Prof. Murray Grant</b> - Elizabeth Creak Charitable Trust, Chair in Food Security</p>	<p><b><u>University of Göttingen, Germany</u></b>  <b>Prof. Dr. Meike Wollni</b> - Professor of Environmental and Resource Economics</p>
<p><b><u>University of Ghent, Belgium</u></b>  <b>Prof. Marc Heijde</b> - Prof Plant Biotechnology and molecular biology/IPBO program manager</p>	<p><b><u>University of Nairobi, Kenya</u></b>  <b>Prof. Cecilia Moraa Onyango</b> – Assoc. Prof. of Horticulture</p>
<p><b><u>University of Ghana, Ghana</u></b>  <b>Prof. Irene Egyir</b> – Dean of School of Agriculture</p>	<p><b><u>Makerere University, Uganda</u></b>  <b>Prof. John Mango</b> - Department of Mathematics</p>
<p><b><u>University of Kwazulu-Natal, South Africa</u></b>  <b>Prof Joyce Chitja</b> – Assoc. Prof. of Food Security &amp; Director of the African Centre for Food Security</p>	<p><b><u>University of Ljubljana, Slovenia</u></b>  <b>Prof. Nataša Poklar Ulrih</b> – Prof. of Biochemistry, Dept. of Food Science and Technology</p>
<p><b><u>University of the Western Cape, South Africa</u></b>  <b>Prof. Julian May</b> - Director DSI-NRF CoE in Food Security</p>	<p><b><u>University of Leeds, UK</u></b>  <b>Prof. Steven Banwart</b> – Director of the Global Food and Environment Institute</p>
<p><b><u>University of Montpellier, France</u></b>  <b>François Pierrot</b> - Vice President, International Affairs</p>	<p><b><u>University of Mpumalanga, South Africa</u></b>  <b>Prof. Victor Mlambo</b> - Professor of Animal Sciences</p>
<p><b><u>University of Johannesburg, South Africa</u></b>  <b>Prof Olaniyi Fawole</b> – Director of Postharvest and Agroprocessing Research Centre</p>	<p><b><u>University of Hohenheim, Germany</u></b>  <b>Prof. Dr. Mizeck Chagunda</b> – Chair of Animal Breeding &amp; Husbandry in the Tropics and Subtropics. Principal Lead for University-wide network on Research in and with Africa</p>

# Sustainable Food Systems

As a truly global platform, the Africa-Europe Cluster of Research Excellence (CoRE) will address food systems challenges by (1) conducting collaborative research on food systems transformation, (2) assuring continuity through a 10-year collaboration, (3) pooling resources for scale and impact, and (4) significantly bolstering capacity in African institutions. Collaboration will span disciplines, geography, and sectors, enabling solutions that transcend unilateral approaches.

The 10-year activity plan is aligned with three pillars: education, research, and technology transfer. The plan draws on the broad fundraising and rich network capabilities inherent in the Cluster membership. Building on the sound foundation of already established partnerships and programmes, extensive collaborative research and capacity building are envisaged, with a particular focus on early career researchers embedded in joint projects. By ensuring that the next generation scientists operate within a global community that co-creates solutions with multi-sectoral stakeholders, the Cluster will make substantive contributions to addressing challenges in African and European food systems.







## Co-Leads

### ARUA

#### Rhodes University, South Africa

**Prof. Jen Snowball** – Department of Economics,  
Professor of Economics

#### University of Lagos, Nigeria

**Prof. Duro Oni** – Department of Creative Arts,  
Professor of Theatre Arts

### The Guild

#### King's College London, United Kingdom

**Prof. Roberta Comunian** – Department of Culture, Media and Creative Industries,  
Prof. of Creative Economies

**Dr. Eka Ikpe** – Director of the Africa Leadership Centre, and Reader in Development Economics in Africa

## Core Partners

#### University of Cape Coast, Ghana

**Dr. Madinatu Bello** - Department of Theatre and Film

#### Stellenbosch University, South Africa

**Prof. Michael Graha** - Faculty of Economics  
and Management Sciences

#### University of Witwatersrand, South Africa

**Ms. Avril Joffe** - Postgraduate Coordinator and Chair of School of Arts

**Dr. Munyaradzi Chatikobo** - Head of the Cultural Policy and Management

#### University of Ghana, Ghana

**Dr. Mohammed-Aminu Sanda** - Senior Lecturer at the Department of Organization and HR Management

**Dr. Akosua Keseboa Darkwah** - Assoc. Professor at the Department of Sociology

#### University of Nairobi, Kenya

**Samuel M. Maina** - Head of the Department of Art & Design

**Mrs. Joanne Mosom** - Lecturer

#### Aarhus University, Denmark

**Assoc. Prof. Teke Ngomba** - Dept. of Media and Journalism Studies, School of Communication & Culture

**Assoc. Prof. Nanna Schneidermann** - Dept. of Anthropology, School of Culture and Society

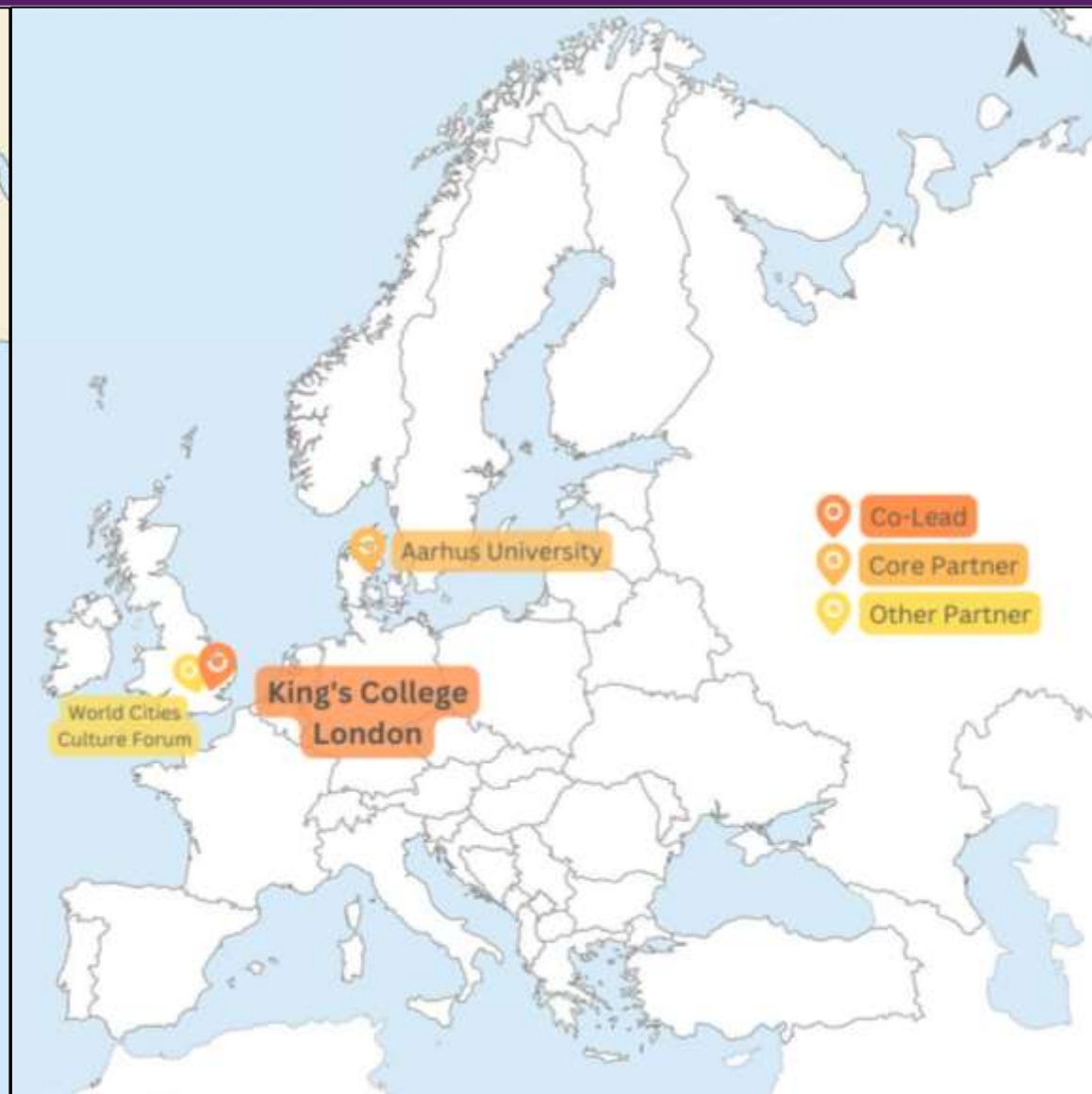
# Creative Economies: Cultures, Innovation and Sustainability

This CoRE aspires to become an international point of reference for research on creative economies.

Research on creative economies has so far been narrowly focused on the Global North and has not placed enough value on cultures, heritage, innovations and ideas from the Global South. The CoRE rebalances this perspective by supporting research collaborations across European and African universities, addressing shared research challenges that aim to support the development of more equitable, innovative and sustainable creative economies.

The project acknowledges that recognising the value of all cultures and creative expression is the foundation of both economic and social development, as well as international cooperation. Creative economies are not only essential to the innovation, technology and economic development of many cities and regions but are also cornerstones of sustainable development, community engagement and dialogue across cultures and generations.





# Engineering for the Future

Engineering plays a key role in solving complex global challenges including mitigating climate change, energy and food security, and public health. These challenges do not fall in a specific discipline nor are they limited to a single country, region, or continent. They must be addressed by applying interdisciplinary approaches across diverse geographical locations for impactful and effective solutions.

The vision of our CoRE is to provide an engineering training and research ecosystem that brings this insight through collaboration between African and European universities. The goal is to develop a cohort of PhD graduates who are trained in engineering research and development, as well as governance, leadership, inclusivity, and sustainability to drive excellence and underpin Agenda 2063 to make Africa a global powerhouse through working with government and industry.

Co-Leads	
ARUA	The Guild
<b><u>University of Pretoria, South Africa</u></b> Prof. Wynand Steyn – Dean of Faculty of Engineering, Built Environment and IT	<b><u>King’s College London, UK</u></b> Prof. Barbara Shollock - Head of the Department of Engineering
Core Partners	
<b><u>Makerere University, Uganda</u></b> Assoc. Prof. Dorothy Okello – Dean of School of Engineering Prof. Rhoda Wanyenze Prof. John Mango Magero	
<b><u>University of Ghana, Ghana</u></b> Prof. Elsie Effah Kaufmann – Dean of School of Engineering Sciences	<b><u>University of Ljubljana, Slovenia</u></b> Prof. Miha Moškon - Assoc. Prof. of Computer Science at the Faculty of Computer and Information Science
<b><u>University of Ibadan, Nigeria</u></b> Prof. Victor Olawasina Oludokuni	<b><u>University of Lagos, Nigeria</u></b> Prof. Muhammed (MOH) Amuda
<b><u>University of Nairobi, Kenya</u></b> Dr. John Obiero - Senior Lecturer and Chairman of the Dept. for Environmental and Biosystems Engineering Prof. Duncan Mbuga - Assoc. Prof. at the Dept. for Environmental and Biosystems Engineering	







# Capacities for Science

The following set of clusters are grouped into a priority area that is aligned with the AU-EU Innovation Agenda



# The Politics of Sustainable Development

This CoRE, which brings together inter- and transdisciplinary expertise from the social sciences, humanities, natural sciences, and law, will undertake innovative research and develop PhD training programs that build capacity for achieving sustainable development.

A major outcome will be to increase the knowledge base on governance for sustainable development and strengthen the science-policy interface required for societal transformation. We will ensure the long-term sustainability of the CoRE and its scientific impact by developing a community of knowledge partners, including senior researchers, policymakers, doctoral students, and early career scholars equipped with actionable knowledge and skills, which will allow them to plan and support evidence-based public policies aimed at achieving sustainable development in response to the climate challenges.

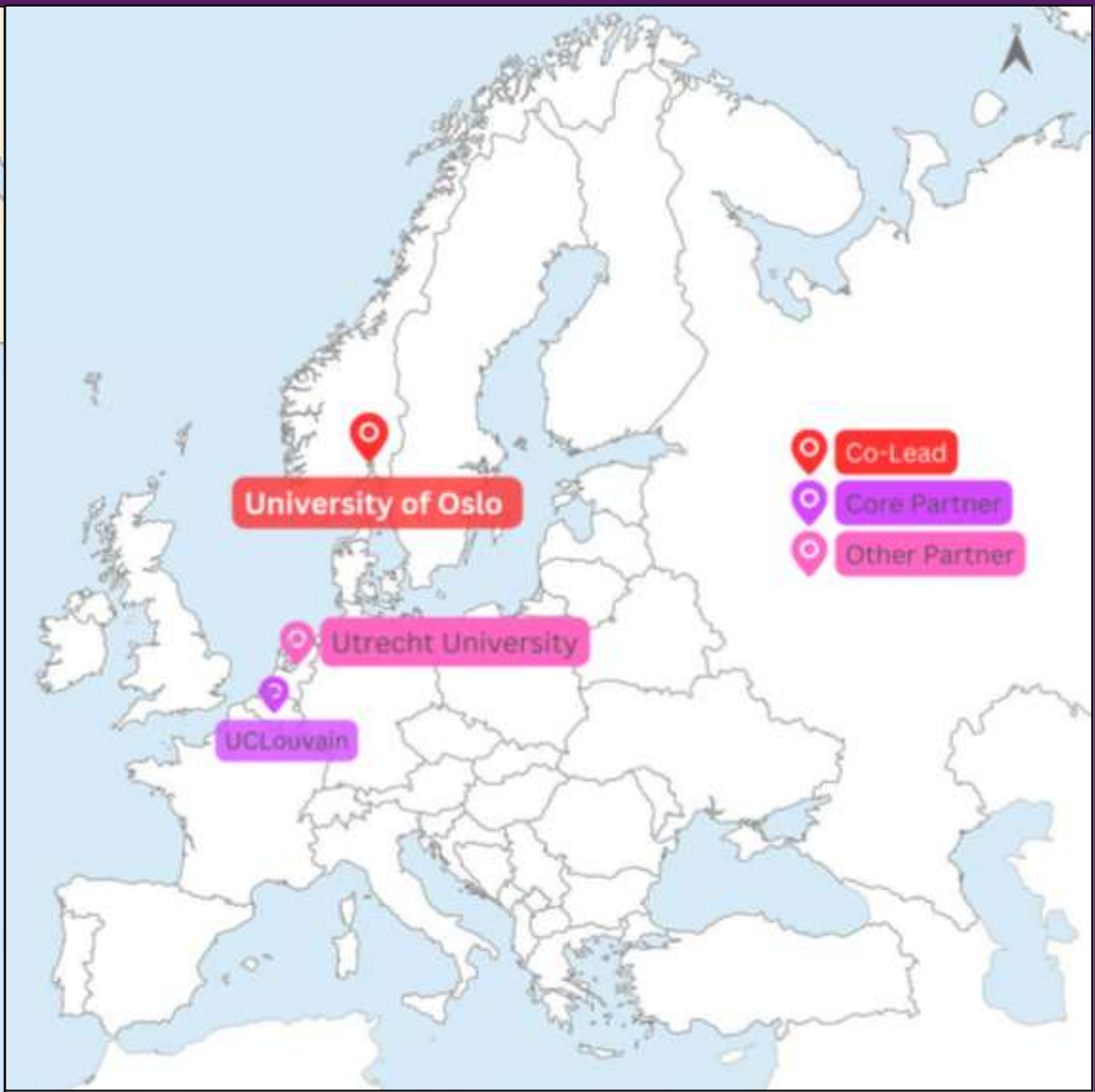
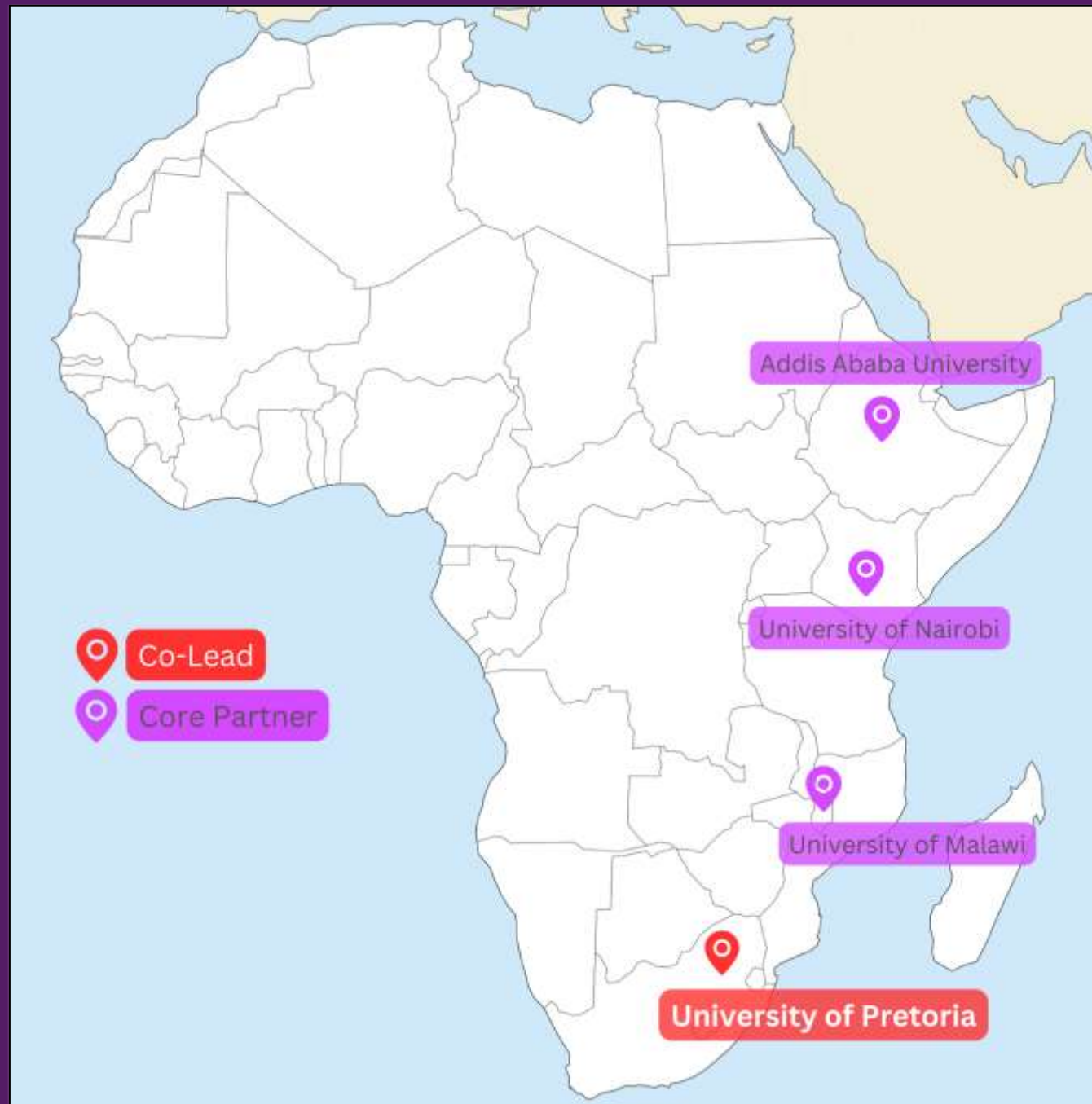
We aim to train a minimum of 40 PhDs at participating universities in Africa over 10 years, and to develop skills and apply evidence-based research findings to design and implement national and regional policies on climate and sustainable development in Africa and Europe.

The CoRE's contribution to Africa-Europe collaboration by undertaking cutting-edge research and building a knowledge base that is operationalised into cost-effective, inclusive, and equitable policies that promote sustainable development.

Co-Leads	
ARUA	The Guild
<p><b><u>University of Pretoria, South Africa</u></b></p> <p><b>Dr. Heide Hackmann</b> – Director of Future Africa</p>	<p><b><u>University of Oslo, Norway</u></b></p> <p><b>Prof. Dan Banik</b> – Centre for Development and the Environment</p> <p><b>Prof. Tore Rem</b> – Director of UiO: Democracy</p>
Core Partners	
<p><b><u>University of Nairobi, Kenya</u></b></p> <p><b>Prof. Karuti Kanyinga</b> – Institute for Development Studies</p>	<p><b><u>UCLouvain, Belgium</u></b></p> <p><b>Prof. Sandy Tubeuf</b> – Professor in Health Economics</p>
<p><b><u>Utrecht University, The Netherlands</u></b></p> <p><b>Professor Frank Biermann</b> – Copernicus Institute of Sustainable Development</p>	<p><b><u>University of Malawi, Malawi</u></b></p> <p><b>Professor Boniface Dulani</b> – Director of Research at Afrobarometer</p>
<p><b><u>University of Addis Ababa, Ethiopia</u></b></p> <p><b>Professor Aklilu Amsalu</b> – Centre for Sustainable Development</p>	







## Building Capacities for Interdisciplinary Peace Research: Exploring Conflict, Environment, Technology, Inequality, and Identity in Africa

This CoRE will undertake an interdisciplinary approach to address peace and security challenges at the intersection of the environment, technology, and political (in)stability, focusing on four crosscutting intervention areas: (1) knowledge generation and dissemination, (2) capacity building and cohort building across the academy, (3) dissemination, and (4) practice in Africa and Europe.

The approach will be systematic, participatory, decolonised, and solution-oriented. The pathways to change include the development of research databases, supervision capacities and joint PhDs, research workshops, policy dialogues and peacebuilding interventions.

Existing knowledge systems show that identity and inequality influence peace and conflict in Africa, because they interact to underline access to income, environment, political participation, and technology. Despite the growing global significance of environmental sustainability and technological proliferation, their nexus with identity and inequality have not been adequately studied in African peace and (in)security discourses. This Cluster fills this gap by centring them as important contributors alongside peace and security.

Co-Leads	
ARUA	The Guild
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Core Partners	
<p><b><u>University of Ghent, Belgium</u></b></p> <p><b>Prof. Dr. Koen Vlassenroot</b> – Conflict Research Group</p>	<p><b><u>University of Ghana, Ghana</u></b></p> <p><b>Mary Boatemaa Setrana</b> – Director, Centre for Migration Studies</p>
<p><b><u>Makerere University, Uganda</u></b></p> <p><b>Prof Sarah Ssali</b> – Dean of the School of Gender</p>	<p><b><u>University of Pretoria, South Africa</u></b></p> <p><b>Professor Tawana Kupe</b> – Department of Political Science</p>
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# Promoting Impactful Research and Education on Inequalities, Poverty, and Deprivation Across Africa

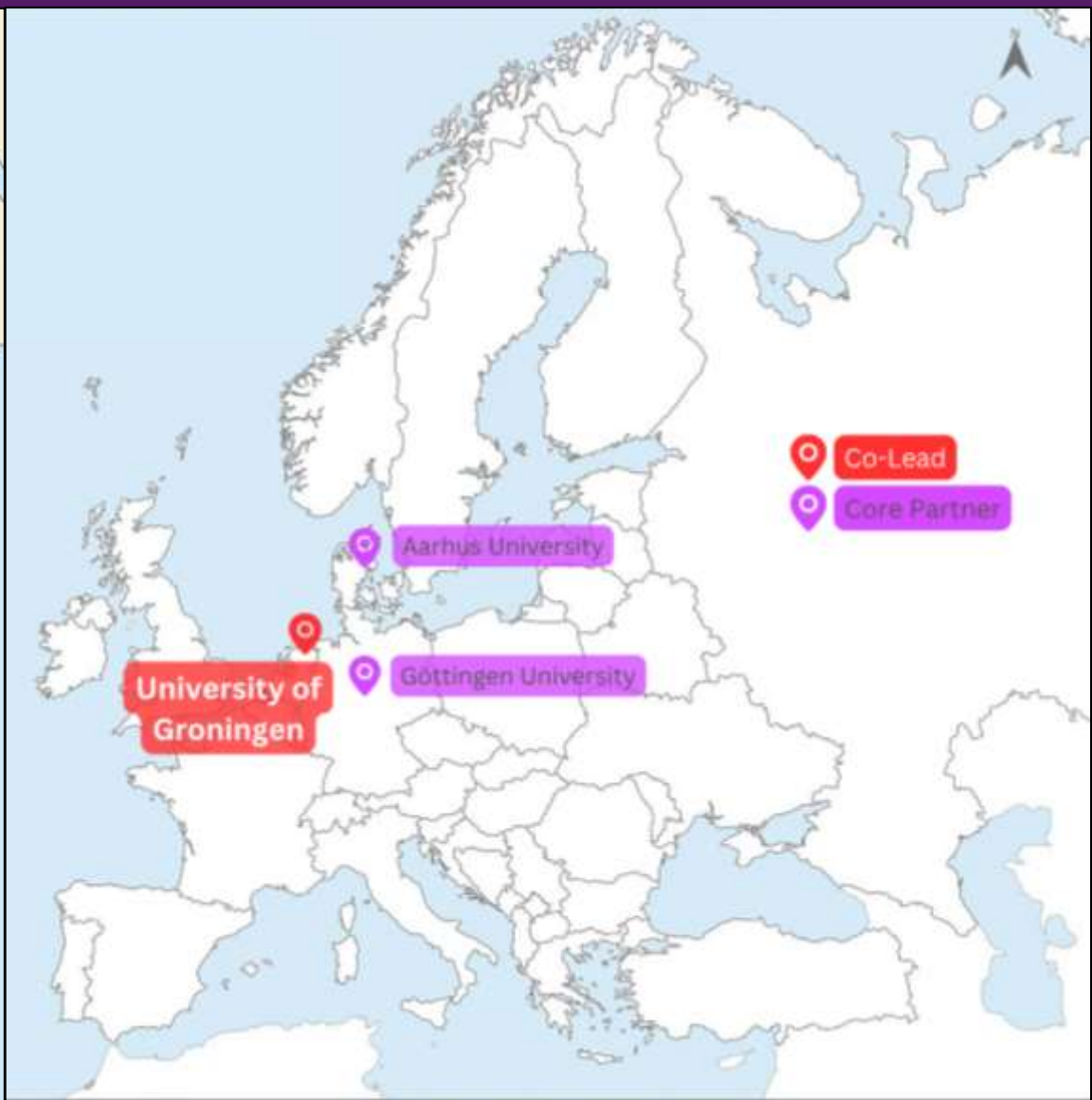
Coordinated interdisciplinary research that pools the strengths of researchers from the global south and the global north is crucial to effectively contribute to the attainment of the Sustainable Development Goals.

This CoRE will provide a knowledge base for SDG compliance and enhanced development for Africa. It will grow indigenous, African research capacity with a work programme that covers the multidimensional inequalities that are confronted in several of the SDGs, and that intersect to perpetuate inequality and poverty.

The CoRE will design and implement impactful, innovative joint research programmes and cognate capacity building activities by developing joint Masters and PhD projects, a joint doctoral programme, and training programmes for policy makers, civil society and business enterprises. It will enhance the (inter)disciplinary knowledge infrastructure of its partners by training and mentoring research staff. It will deliver an inclusive, multidimensional analysis of deprivation and poverty which addresses various inequalities.

Co-Leads	
ARUA	The Guild
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Core Partners	
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