



BIENNIAL REPORT 2020-2021



An aerial photograph of a river and surrounding wetlands, overlaid with a blue color gradient. The river flows from the top left towards the bottom right, with several smaller channels branching off. The surrounding land is a mix of green and brown, indicating vegetation and open land. The blue overlay is more prominent in the upper left and right areas, fading towards the bottom left where the text is located.

OUR VISION

We envision a more sustainable and equitable future through strengthening and connecting science with action.

OUR MISSION

We cultivate, inspire and connect emerging science leaders in Africa and Asia to work with societal partners in creating a more sustainable and equitable future.

CONTENTS

WELCOME	4
.....	
START'S IMPACT	5
.....	
PROGRAM HIGHLIGHTS	7
.....	
PARTNERS	27
.....	
ORGANIZATION	28
.....	
MORE ABOUT START	30
.....	

WELCOME

The 2020-2021 period, marked by a global pandemic, increasingly extreme weather and unprecedented wildfire, starkly revealed societal vulnerabilities in our highly interconnected and inequitable world, and further underscored the tremendous challenge that we face in confronting the climate emergency. START's mission remains more relevant than ever as we work with partners in Africa and Asia to strengthen scientific capacities for engaging society around these complex challenges.

The Covid-19 pandemic brought significant change to how START operates, as we adjusted to the realities of remote engagement and programming, giving us new ways to innovate in the digital space and giving us greater appreciation of both the potential and the limitations of virtual engagement. Through our remote programmatic activities we have been able to continue promoting integration of knowledge and disciplinary expertise to address complex challenges, and to more effectively integrate scientific and practitioner knowledge to ensure greater societal relevance of research outcomes in informing solutions.

With this 2020-2021 biennial report, I am pleased to share news of START's progress in the following areas:

Science leadership: Promoting science leadership has been an important element of START's long-term impact through a multi-pronged approach of new skills, integrated knowledge, and greater connectivity. During this period, we significantly increased our work in science leadership, offering a virtual science leadership training course for the African Academy of Sciences and a virtual reflexive learning in leadership opportunity for West African researchers. Going forward, we plan to continue building our science leadership offerings in West Africa and beyond, with an emphasis on building internal leadership competencies for doing effective transdisciplinary research in complex situations.

Science-society engagement: START's programs strongly emphasize the strengthening of skills and experiential confidence of researchers working with communities. During this period, we supported virtual efforts by researchers and university faculty to engage local governments and communities in Africa and Asia to better address place-based adaptation and climate resilience challenges. We also continued to offer opportunities to strengthen transdisciplinary capabilities related to research on adaptation and resilience.

Online learning: Recognizing that the pandemic response has accelerated trends towards online learning, START is in the process of developing virtual learning resources in the areas of science leadership, science writing, and proposal development skills. These virtual learning resources are being directed towards early- and mid-career researchers and sustainability professionals in Africa and Asia and will feature a combination of synchronous and asynchronous engagement.

We are very grateful for the support we received during the 2020-2021 period from the US Global Change Research Program (from which START receives core funding) as well as from the National Science Foundation, the National Aeronautics and Space Agency, the International Development Research Centre of Canada, the Research Fund of Quebec, the UK Foreign Commonwealth and Development Office, the UK Natural Environment Research Council, the UN Environment Programme, and the African Academy of Sciences. We are also very grateful for our strong partnerships with numerous universities, research centers, NGOs and government agencies in Africa, Asia, and elsewhere—partnerships through which START is able to achieve lasting impact.

Jon Padgham
START's Executive Director

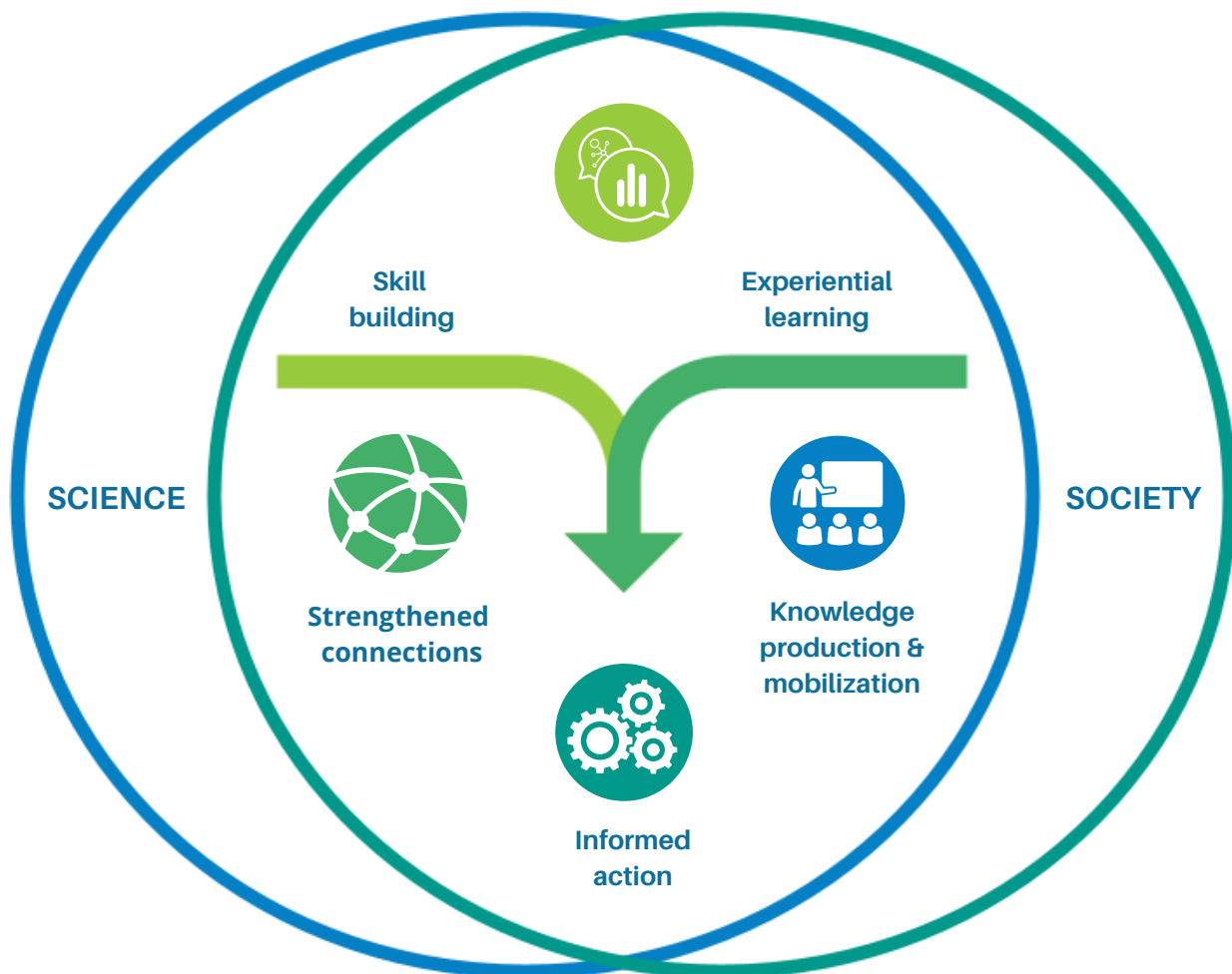
START'S IMPACT

START enables science leadership and strengthens capacities for global change science

through integrating skill building and networking with opportunities for experiential learning. This effort requires a combination of new skills, expanded knowledge, and enhanced connectivity within peer groups, from peers to mentors, and from regionally based researchers to global research communities. We believe that capacity development outcomes are strongest where efforts to promote connectivity —

within and across regions and regionally to globally — are linked to experiential learning and skill building. Our work targets early- and mid-career researchers and practitioners who work at the interface of science and action in Africa and Asia. Through our long-term presence in Africa and Asia, START has helped to elevate the role of science in informing national and regional efforts to address vulnerability and risk, as well as increasing the visibility and impact of researchers in shaping global responses to sustainability challenges.

START'S CAPACITY DEVELOPMENT FRAMEWORK



SKILL BUILDING & EXPERIENTIAL LEARNING

START has extensive experience in providing training spanning modeling and data analytical skills through to approaches for research co-design and co-production. START places a high value on advancing experiential learning that enables the assimilation and translation of new skills and knowledge into practice.



NETWORKING & CONNECTIVITY

Connectivity depends foremost on building a critical mass of researchers and decision makers who can more effectively engage on global change challenges. START advances this effort through creating opportunities for early-career researchers to work directly with early-career professionals from government and civil society.



KNOWLEDGE PRODUCTION & MOBILIZATION

START activities are designed to promote knowledge exchange among researchers, experts, practitioners and policymakers. Diverse tools and methods are employed by START to promote knowledge sharing, including multi-stakeholder dialogues, writing workshops, learning labs and forums.



INFORMED ACTION

START has a strong legacy of developing programs that inform action. As a result of their involvement in START programs, alumni have gone on to advise and inform governments, and have moved into positions of influence within the policy realm.

PROGRAM HIGHLIGHTS

START's work addresses complex sustainability challenges linked to a changing climate including agriculture and food security, urban resilience, disaster risk reduction, and renewable energy.

Now more than ever, these critical challenges require ambitious responses that are locally and regionally driven, grounded in science and developed with partners from all sectors of society.

During the 2020-2021 period, START has supported the development of capacities, knowledge, and solutions across these areas of work by engaging with partners at the intersection of science, policy and practice.

Perspectives From START Alumni



“

This scholarship has opened all the doors for what I am doing now. I gained self-confidence allowing me to present at international conferences and host training on topics related to adaptation to climate change.

DR ISABELLE W. P. DABIRE
(BURKINA FASO)
HEAD OF MACROECONOMICS
DEPARTMENT, INSTITUTE FOR
ENVIRONMENTAL AND AGRICULTURAL
RESEARCH (INERA)
ACCFP FELLOW 2009-2010

START

“

My mentor brought me to meet vulnerable communities. This was an eye-opening experience: as researchers, we often are so busy doing desk work that we forget to understand the real issues in the communities. Since the fellowship, I have tried to use this new approach in my research.

NURROHMAN WIJAYA
(INDONESIA)
RESEARCHER, BANDUNG INSTITUTE OF
TECHNOLOGY (URP-ITB), INDONESIA



START



“

One of the learnings from the fellowship is that we need to translate research outputs in a form that the community can use and understand. We will learn from them and they will learn from us. This was a new approach for me, that I will bring with me in the future.

DR. LUBNA ALAM
(MALAYSIA)
RESEARCH FELLOW, NATIONAL
UNIVERSITY OF MALAYSIA

START

“

The START fellowship's seed fund led to every other achievement I had as a climate change researcher and policy influencer on the African continent.

DR NICHOLAS OZOR
(NIGERIA)
EXECUTIVE DIRECTOR, AFRICAN
TECHNOLOGY POLICY STUDIES
NETWORK (ATPS)
ACCFP FELLOW 2008-2009



START



SCIENCE LEADERSHIP TRAINING FOR THE AFRICAN ACADEMY OF SCIENCES

The emergence of science leadership depends on an array of factors including intrinsic interpersonal qualities, access to opportunities for acquiring and honing transversal skills, and experiential confidence in engaging societal partners in research and in effective science communication. Such leadership also requires proficiency in navigating ever-growing levels of connectivity with respect to peer groups, effective mentoring, new approaches of science to action, and engagement in global science initiatives and networks.

START is helping to advance science leadership capabilities in Africa through engagement with the African Academy of Sciences (AAS). In August 2020 and March 2021, START collaborated with AAS to develop science leadership training for the *Future Leaders - African Independent Research* (FLAIR) and the *Climate Research for Development* (CR4D) fellowship programs administered by AAS. The training course focused on leadership styles, strategic influencing, gender in leadership, leadership communications,

professional networking, building international collaborations, creating and managing high-performing teams, and risk management. The course was offered three times in the 2020-2021 period and reached 62 African early-career scholars. This science leadership course was supported by the Royal Society of London, and featured a course instructor team from Mali, South Africa, Uganda, and Zimbabwe.

“All the lessons taught are very valuable in my positioning to become a leader who is adaptable in a changing environment. The interactive nature of the training created opportunities to practice some of the skills gained from the course. Thank you very much for the opportunity to be part of the FLAIR Scientific Leadership Training.”

Nicholas Musyoka
Council for Scientific and Industrial
Research
South Africa

"It was, from my point of view, an exciting experience. We have a team of lecturers with good experience that permitted us to significantly change our leadership capacities just in a few days. Particular attention should be paid on what we should do to become transformative leaders. That for me is really great."

Elie Kamseu

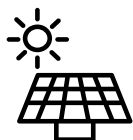
Mission de Promotion des Matériaux Locaux
Cameroon

Future Leaders-African
Independent Research
(FLAIR) fellows who
undertook the START
science leadership
course in 2020.



"A good leader is a crucial key for a successful research group. Attending the training gave me a new perspective on how can we get the most from a team by having good leadership skills. The rich discussion on different key topics such as leading and managing a team, strategic influencing, negotiating, time management and work life balance are not naturally talked about in the science world, although they are required. The training, therefore, led me to reflect, re-assess and improve the way I work and the way I collaborate with others."

Rondrotiana Barimalalam
University of Cape Town
South Africa



PROMOTING GAINS IN RENEWABLE ENERGY (ProGREEN) IN WEST AFRICA

Nearly 620 million people in Sub-Saharan Africa lack access to electricity. Addressing the energy deficit challenge in Africa is critical to increasing development potential and reducing food insecurity. The demand for energy in West Africa will increase substantially by 2050; finding accessible, sustainable and reliable energy sources to meet these needs is of paramount importance.

The *Promoting Gains in Renewable Energy - West Africa* ([ProGREEN](#)) project (supported by the [Research Fund of Quebec](#)) is addressing knowledge and capacity needs for advancing renewable energy transitions and subsequent effects on development.

Small-Scale Renewable Energy Assessments in Senegal and Burkina Faso

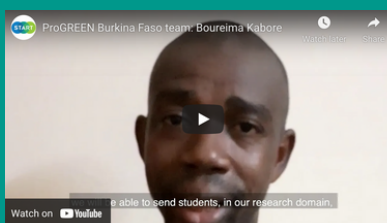
During Phase 1 of the project, START assembled multidisciplinary and cross-sectoral teams in Burkina Faso and Senegal to conduct in-depth assessments of key enabling and constraining factors for advancing renewable energy transitions in both countries. The assessments found that access to renewable energy in remote areas is enabled by availability of renewable energy sources, government efforts to improve policy and regulatory frameworks, and falling prices of solar equipment. Renewable energy access was found to bring significant

improvements to the living conditions of local communities. However, insufficient funds, too few qualified technicians, inadequate quality control for equipment, and poor engagement of local communities were found to hinder the development of renewable energy.

The assessments recommended that holistic capacity development, updating of best practices, and integrating research development and cooperation among actors in the renewable energy space are needed for expanding availability of and access to decentralized renewable energy in Burkina Faso and Senegal.

Advancing Knowledge on Renewable Energy in West Africa

Building from insights gained during the ProGREEN renewable energy assessments, START organized a virtual Advanced Institute (AI) for 45 early and mid-career researchers from Burkina Faso, Senegal and Morocco in June, 2021, featuring an instructor team from each of the three countries. The AI featured a mix of plenary and breakout sessions to allow participants to learn from experts and to exchange knowledge and experiences with their peers around (i) the contributions of renewable energy to development and synergies with other sectors important for achieving the SDGs, (ii) the renewable energy landscape in West Africa, the linkages to regional and global governance frameworks and financial schemes, and (iii) the necessity for closely aligning research and action. Participants sharpened their skills for understanding and communicating critical renewable energy issues to diverse audiences as well as expanding their network of peer researchers and professionals from which future partnerships and knowledge sharing can develop.



Charles Didace Korseibo (TOP) and Boureima Kaboré (LEFT) from the ProGREEN Burkina Faso team share insights on working with a multidisciplinary team.

Phase 1 participants expressed the need for more comprehensive capacity strengthening in order to engage more meaningfully in co-design processes and to communicate and collaborate effectively with diverse stakeholders. In response to these needs, START has designed ProGREEN Phase 2 (beginning in 2022) to reinforce these capacities with early-career West African scientists and professionals in order to make meaningful progress towards achieving SDG 7 ("Ensure access to affordable, reliable, sustainable and modern energy for all."). Phase 2 will be anchored in the ProGREEN Leadership Fellows program.



The ProGREEN Burkina Faso assessment team conducts a meeting in Ouahigouya



Field data collection trip to a local health center with the ProGREEN Senegal assessment team



COLLABORATION FOR ADAPTATION AND RESILIENCE IN MALI (Co-FARM)

Rural livelihoods are highly dependent on rain-fed agriculture, with rainfall variability being a primary driver of vulnerability relating to food insecurity and poverty, which could worsen given current trends of decreasing average rainfall, increasing temperatures and more extreme events. Rural communities are facing additional challenges related to population pressures, difficulty accessing farm inputs and technologies, and security concerns.

In light of these complex challenges,

START and partners from Mali, Benin and South Africa teamed up to advance understanding of how collaborative community resilience and adaptive capacity help communities to survive and thrive under climate change, therefore bolstering inclusive, holistic community resilience as a means for communities to better respond to unpredictable changes. The *Collaboration for Adaptation and Resilience in Mali* (Co-FARM) project was undertaken in the Sikasso region of southern Mali in 2020 and 2021 to investigate this question. The project made significant progress on convening stakeholders around the shared use of rainwater-runoff catchments, and voicing community concerns and ideas and working together to actualize solutions. This project was supported by IDRC (Canada) and FCDO (UK) as part of the *Climate Adaptation and Resilience* (CLARE) initiative.

Newly installed water tower and solar pumping system in the rural commune of N’Goutjina, Mali



“I think all the tools taught in this [lab] are useful for me. As part of my research I will be more attentive to my collaborators but also adapt to new ideas concerning my field of research through planning scenarios and anticipating the future”

Malick Faye
Senegal

Fostering Leadership

Co-FARM supported early-career Francophone researchers in strengthening leadership competencies for collaborating with diverse others and navigating complexity. A Leadership Lab, co-designed and facilitated with Reos Partners, was offered in a combined synchronous and asynchronous virtual format, and allowed participants to reflect on traits and capacities related to reflexivity, empathy, foresight, and flexibility. One participant noted that, "[This lab] allowed me to realize how much I wanted to express these feelings while working on my previous project, and to express my opinions in an open way to my colleagues. I would have made better decisions and solved problems differently if I'd had these capacities before."

Engaging Women around Water Resource Needs

Cultivating community dialogue was



The Bassin de Collecte des Eaux de Ruissellement (BCER) in N'Goutjina, Mali

critical to being able to fully engage women on their concerns around water resource needs. Through dialogue it was established that the runoff catchments were not meeting women's income generating needs. The Co-FARM project, which prioritized strong dialogue with women and other groups, was able to respond by making capital improvements to the catchments, thus increasing women's access to water with positive ripple effects on household livelihoods. As one of the female participants explained, "For women mainly, having water all year round is an opportunity to carry out income-generating activities in the off-season. Through this opportunity, [it might also be possible] to reduce logging for charcoal production."



DIGITAL AGRICULTURAL SERVICES TO IMPROVE THE LIVELIHOODS OF COMMUNITIES (DigitAL)

Rural communities face particular challenges accessing climate and related information to support decision making related to agricultural and pastoral livelihoods. In northern Ghana, as in much of the region, farmers contend with significant information gaps. Throughout 2020 and 2021, the *Digital Agricultural Services to Improve the Livelihoods of Communities* ([DigitAL](#)) project worked to expand the reach of learning hubs on new farm technologies and alternative livelihoods, strengthen the capacities of knowledge providers to transfer information to local users through new communication and outreach tools, in particular through encouraging participatory methods for knowledge exchange between “users” and “producers”, and strengthen the capacities of local leaders to address cultural barriers

that minimize uptake of relevant climate information.

The project produced two Climate Adaptation Resource Centres (CARCs) in Ghana’s Upper West Region, and women’s groups produced traditional songs with the themes of Strength in Unity; Protecting Water Bodies; Harvest, Storage and Family; and Protecting Economic Trees. Weekly radio events in key thematic topics were also facilitated to give community members a platform for sharing climate and agriculture information. The shows broadcasted on two partner radio stations. Finally, the DigitAL team engaged secondary school students in knowledge brokering through a quiz competition, a radio talk show and drama shows aimed at educating their communities on climate-smart crop and livestock production.

"One of my career goals has been to contribute to a more knowledgeable society regarding climate change adaptation and mitigation in the agriculture and energy sectors through research. Working with the youth on the DigiTAL project has therefore contributed to my career goal because it afforded me the opportunity to use the DigiTAL platforms through the youth activities to communicate and provide more knowledge to farmers on climate smart agriculture based on research findings."

-Francis Awaafu Akugre
Assistant Technical Officer for
DigitAL
University of Ghana



Youth from Lawra Senior High School in Upper West, Ghana participate in outreach with the DigitAL team

This project was supported by IDRC (Canada) and FCDO (UK) as part of the *Climate Adaptation and Resilience* (CLARE) initiative. The project drew on previous work of the [Adaptation at Scale in Semi-Arid Regions \(ASSAR\)](#) project, a consortium of the [Collaborative Adaptation Research Initiative in Africa and Asia \(CARIAS\)](#).



Prince Ansah meets with local stakeholders at Climate Advisory Resource Centers (CARCs) in Upper West Ghana



FRACTAL

FUTURE RESILIENCE FOR AFRICAN CITIES AND LANDS (FRACTAL)

Africa is experiencing rapid growth of its cities, which have strong interdependencies for food, water, labor and remittances, infrastructure, raw materials, and energy between urban and surrounding rural spheres. Drought, flooding, heatwaves and other extreme events act as stress multipliers in these rapidly changing landscapes. The *Future Resilience for African Cities And Lands* (FRACTAL), which ended in 2020, was conceived to further actionable knowledge in the complex urban settings of Cape Town, Durban, and Johannesburg in South Africa; Gaborone in Botswana; Lusaka in Zambia; Harare in Zimbabwe; Maputo in Mozambique; and Windhoek in Namibia.

During the FRACTAL project, START collaborated with pairs of university researchers and city officials to distill climate information, engage city stakeholders through learning labs and share knowledge through city learning. City stakeholders identified key issues in their city and then sought to address these issues using iterative, transdisciplinary approaches. At the same time, and working together with international, external partners, the local

partners conducted projects which specifically co-explored the main research objectives of the project to provide relevant climate information at the city scale and to use this climate information to co-produce knowledge that could be shared across the cities.

At the end of the FRACTAL project, there were a number of smaller follow-on pilot projects to advance learning that took place during FRACTAL. These included virtual platforms (because of Covid-19) on a flood-malaria hotspot predictive tool in Maputo; the setting up of a climate desk and Environment Management Unit in Harare; policy dialogues in Gaborone; a water security initiative in Lusaka; and Windhoek's climate change strategy and action plan.

Floods in Lusaka. Photo: WSTF Kenya



“While each city in the region is unique, there is still room to learn from each other, and this is true not only for academics but also for city stakeholders and the city authorities themselves.”

Chipo Plaxedes Mubaya
Harare

In order to adapt to the Covid-19 pandemic, in 2020 and 2021 the project began using virtual platforms to convene its participants, allowing the project to continue, albeit iteratively to accommodate travel restrictions. Despite these challenges, the project objectives were successfully met and each city was able to achieve outcomes

specific to the issues identified at the start of the project, including a flood-malaria hotspot predictive tool in Maputo; the setting up of a climate desk and Environment Management Unit in Harare; policy dialogues in Gaborone; a water security initiative in Lusaka; and Windhoek’s climate change strategy and action plan.

“The FRACTAL project was the gateway to my career path as it provided my first work experience and postgraduate opportunity soon after I had completed my undergraduate studies. Working with senior researchers, fellow embedded researchers, and other FRACTAL partners has helped me sharpen my scientific writing and teamwork skills and opened doors for future collaborations.”

Rudo Mamombe
FRACTAL Embedded Researcher, Harare



Stakeholders during a Learning Lab in March 2019.



SUSTAINABLE URBANISATION GLOBAL INITIATIVE/FOOD- WATER-ENERGY NEXUS

By 2050, the world population is projected to reach over 9 billion and the number of people living in urban areas is expected to double. Challenges linked to an increased demand for food, water and energy resources demand innovative solutions. START granted three awards to African institutions to contribute to the [SUGI-FWE Nexus](#), a call by the Belmont Forum and the Joint Programming Initiative Urban Europe to bring together the fragmented research and expertise across the globe to address these challenges. The initiative aimed to improve access to resources and quality of life in urban areas, by focusing on the interactions between the food, water and energy sectors. Research topics included:

- Robust knowledge, indicators and assessments
- Multi-level governance and management of the Food-Water-Energy Nexus
- Managing potential strategies and solutions to address emerging risk and tradeoffs at the intersection of sustainable urbanization and the Food-Water-Energy Nexus



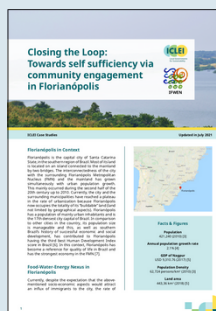
ULL Urban Agriculture capacity building workshop implemented by the Globally and Locally-sustainable food-water-energy innovation in Urban Living Labs (GLOCULL) project.



The Water Hub, study site for the University of Cape Town's research, situated on an old wastewater treatment plant, and surrounding landscape.

START supported ICLEI Africa's participation in the '*Understanding Innovative Governance for Food Water Energy Nexus*' Project (IFWEN). Through this effort ICLEI generated 4 African cases of innovative urban nexus initiatives (out of 9 global cases) and the convening of a global training programme to unpack the ways in which nexus can be approached by local government officials. In addition to a focus on food, water, energy and natural systems, the training programme covered themes of systems thinking, governance, sustainable innovation, and mobilizing finance, and brought about 160 participants from 103 cities around the world, with 50 participants completing the full 7-week training programme (including submission of a concept note for their city). The project has also improved internal knowledge and capacity building, both in developing theory and concepts related to urban nexus, resources and governance, and in improving process learnings.

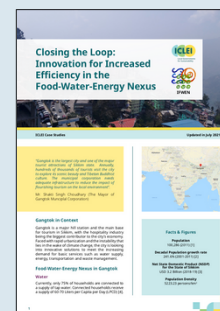
The full case series can be found [here](#), or individual cases can be downloaded below:



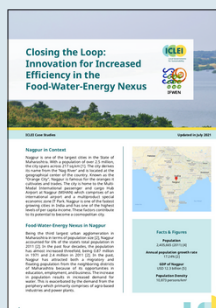
Florianópolis, Brazil:
Urban agriculture and
community engagement



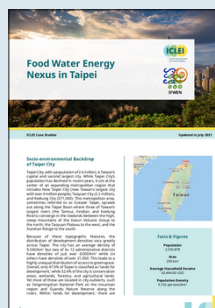
São José dos Campos, Brazil:
Participatory management
for urban forest conservation



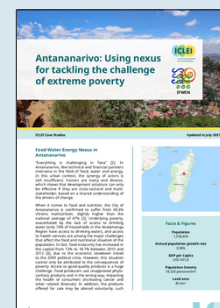
Gangtok, India: Closing
the loop in the waste
management and food sectors



Nagpur, India: Innovation
for increased efficiency
in the water-energy nexus



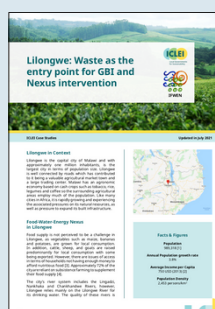
Taipei, Chinese Taipei:
Education and land-use reforms
as urban nexus innovations



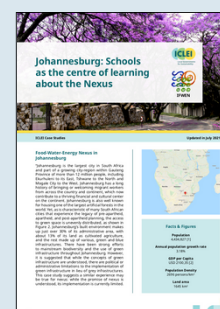
Antananarivo, Madagascar:
Using nexus for tackling the
challenge of extreme poverty



Dodoma, Tanzania:
Climate resilience through
nexus interventions



Lilongwe, Malawi:
Waste as the entry point
for GBI and nexus intervention



Johannesburg, South Africa:
Schools as the center
of learning about nexus



EPIC-N

EDUCATIONAL PARTNERSHIPS FOR INNOVATION IN COMMUNITIES – NETWORK (EPIC-N)

Creating actionable research on global change challenges requires close collaboration between researchers and local governments and communities. Since 2020, START has partnered with the Educational Partnership for Innovation in Communities (EPIC) program and UNEP's Global Adaptation Network to internationalize the EPIC program. This has been accomplished through convening a START-EPIC training workshop in Africa and a START-EPIC training workshop followed by seed grants in Asia in 2021. These efforts have created a foundation on which to

"I would definitely recommend that universities should be encouraged to take up an EPIC-N Program because it's a very good way to make education practical."

Edna Odhiambo
Lecturer
University of Nairobi, Kenya

consolidate gains and further expand the EPIC network in these two regions.

The [EPIC Model](#) was developed in the US to foster sustainability, climate resilience, and adaptation in cities by uniting the human capital of universities with local governments and communities. The partnership works by developing and implementing tailor-made solutions for co-identified issues in the city. The university empowers students to come up with innovative ideas to support the city's development, which are then implemented in the communities under the watch of the university, as part of their curriculum development, as well as the city partners.

The EPIC Model allows students to gain real-world, hands-on experience, allowing them to develop professionally, and local municipalities - which often do not have cordial relations with city residents - can leverage the often-untapped expertise of local universities to tackle their sustainability challenges at low cost and for the benefit of communities on the ground.

In an effort to take the program internationally, several training workshops were held involving university-city pairs from Africa and Asia. In 2020, a training workshop was held in Durban, South Africa where 22 participants representing 10 cities were trained on the EPIC Model. The model was then implemented in these cities and is currently at differing stages of implementation as progress has been hampered by the Covid-19 pandemic, which has imposed restrictions on travel and face-to-face interactions.

In 2021, the EPIC program expanded into Asia, and 54 participants from 11 countries, representing 30 university-city pairs from Malaysia, Thailand, the Philippines, Indonesia, Vietnam, Bangladesh, Nepal, Pakistan, India, Hong Kong, and China, participated in a training workshop to learn and discuss how to plan, scale, and implement the EPIC

“[The EPIC Model] gives us an opportunity to expand the academic world; to be outside and not just in the classroom. And to teach the students, that is a great opportunity for them.”

Pimpawat Teeratitayangkul
Member of the Chiang Mai
City (Thailand) Team

Model across Asia. Additionally, 11 cities were awarded seed grants to help implement the EPIC model. To date, these projects have included sustainability, climate resilience, and adaptation projects around smart farming, environmental planning, flooding, waste, water quality, civic engagement, and green spaces.



2020-2021 PROGRAM HIGHLIGHTS

In May 2021, START partnered with EPIC and UNEP's Global Adaptation Network (GAN) to deliver a workshop on applying the EPIC approach in Asian cities. The 3-day virtual workshop featured pairs of university faculty and local government officials from 32 Asian cities.



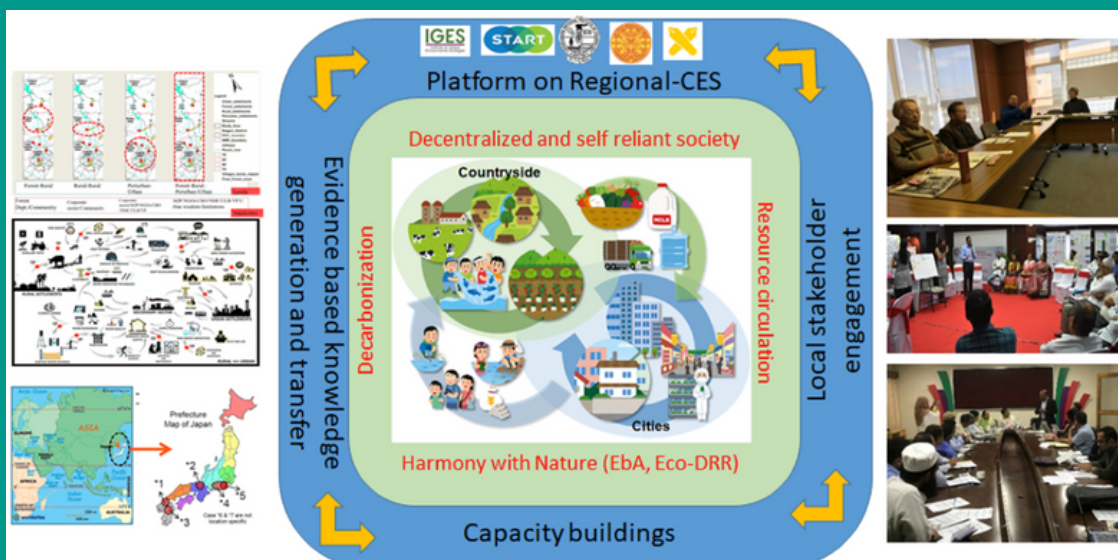
CIRCULAR AND ECOLOGICAL SPHERE

Urban and rural areas in South and Southeast Asia, as elsewhere in the global south, are strongly interconnected through flows of food, remittances, raw materials, finished products, labor, waste, and pollution. This mutual dependence across rural, peri-urban and urban spheres present these regions with opportunities as well as challenges of effectively harnessing these linkages to simultaneously address resilience and adaptation efforts within both urban and rural spheres. The emerging R-CES concept can provide an opportunity to advance positive aspects of rural-urban connectivity by reinforcing incentives for a territorial approach to urban growth.

START is collaborating with the Institute for Global Environmental Strategies in Japan, Thammasat University in Thailand, and the Visvesvaraya National Institute of Technology in India to promote co-design of research on rural-urban connectivity in South and Southeast Asia. Over the past two years, a consortium of research partners has been established, representing 8 cities across South and Southeast Asia. The Circular and Ecological Sphere concept encourages low-carbon energy sources, enhancing flood management through green-blue infrastructure, and the optimization of local resources for addressing waste management. The concept is oriented towards achieving progress on the Sustainable Development Goals, ecosystem-based adaptation, and the twinning of adaptation and mitigation as prioritized in the Paris Climate Agreement.

2020-2021 PROGRAM HIGHLIGHTS

Consultation meetings with local governments to establish priorities for Circular and Ecological Sphere research.



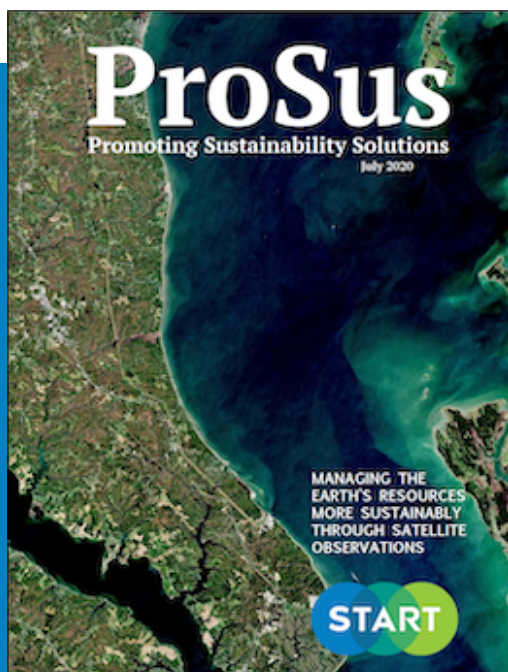


GOFC-GOLD

GLOBAL OBSERVATIONS OF FOREST COVER AND LAND-USE DYNAMICS (GOFC- GOLD)

Satellite images and remote sensing data provide critical information to better understand complex dynamics between forest cover, land-use change and climate change. Such information is key for informing decision makers on sustainably managing natural resources and developing appropriate climate adaptation and mitigation strategies. START has a long-term commitment to strengthening Earth observation capacities in the

global-south through involvement in the *Global Observations of Forest Cover and Land-use Dynamics* (GOFC- GOLD) program. This program provides a coordinated effort to improve developing countries' access to existing data, increase scientists' capacity to produce and analyze new data, and foster regional and international networks of scientists working on land cover and forest change issues.



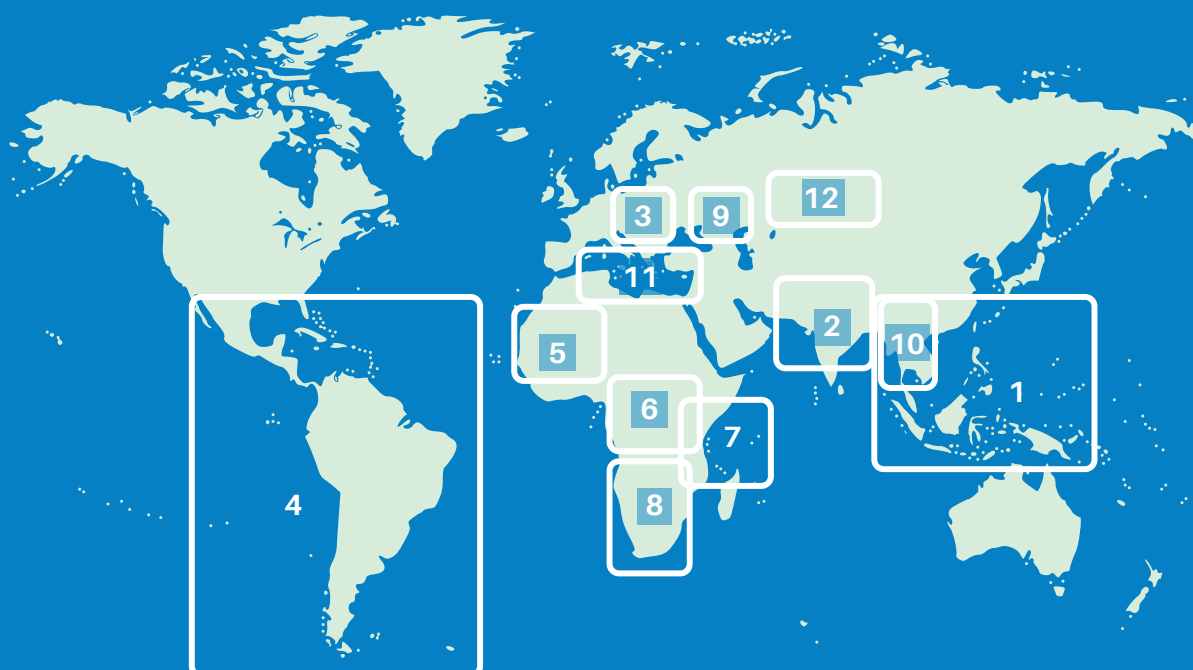
The fourth issue of START's ProSus Magazine, published in July 2020, features the ***Global Observation of Forest Cover and Land Dynamics*** (GOFC-GOLD) program.

"This issue of the ProSus Magazine showcases GOFC-GOLD's legacy around the world, from humid forests in Southeast Asia and Central Africa to fire-dominated landscapes in Africa and Latin America, and more. It brings stories of impact from across the GOFC-GOLD networks, showing how involvement in these networks has allowed scientists to not only increase their skills but also their visibility and connectivity to the global community of land-use change research." – Jon Padgham, Executive Director, START International

START plays a key role in supporting the Regional Networks of the GOFC-GOLD program. The Regional Networks are strengthened through workshops addressing regional concerns and data needs, providing a strong voice for regional priorities and fostering lateral transfer of technology and methods within and between regions. These regional networks also form an important venue for capacity development. In order to keep the Regional Networks vibrant and active during the Covid-19 pandemic, START coordinated with the GOFC-GOLD regional networks to plan and host virtual Regional Network meetings on a monthly basis. Between January and September 2021, eight GOFC-GOLD Regional Network Meetings were held on a variety of regional concerns and topics. Members from all regional networks were invited to participate not only in their own networks' meeting, but also to learn from, share with, and see how other regional networks conduct their activities, and approximately 600 participants joined at least one meeting. Information about each of these meetings, including the final meeting report, is available on the [GOLD-GOLD website](#).

Currently active GOFC-GOLD regional networks:

1. Southeast Asia Regional Research and Information Network (SEARRIN)
2. South Asia GOFC Network (SAGN)
3. South Central European Regional Information Network (SCERIN)
4. Red Latinoamericana de Teledetección e Incendios Forestales (RedLaTIF)
5. West African Regional Network (WARN)
6. Observatoire Satellital des Forêts d'Afrique Central (OSFAC)
7. Miombo Network (MIOMBO)
8. Southern Africa Fire Network (SAFNET)
9. Caucasus Regional Information Network (CaucRIN)
10. Mekong Regional Information Network (MekRIN)
11. Mediterranean Regional Network (MedRIN)
12. Central Asia Regional Information Network (CARIN)





HIGHLIGHTS FROM THE TEMPERATE EAST ASIA START REGIONAL CENTER (TEA-START)

The TEA-START annual science

meeting took place in January 2021 at Chinese Academy of Sciences' (CAS) Institute of Atmospheric Physics in Beijing. Fifty TEA scientists and invited guests attended the physical meeting in response to the social distancing policy and over 4,400 participants, including members of the science committee, staff members, graduate students, and broad audiences across the country and beyond joined the meeting online. The TEA-START annual report (presented at the conference) noted that the center currently leads five international research projects funded by the National Science Foundation of China and CAS, over one-third of its peer-reviewed publications were co-authored with international colleagues, and it hosts eight foreign graduate students from Africa and Asia. The members of the science committee and invited guests suggested that inter-disciplinary approaches of global change and regional climate-ecosystem-human interactions should continue to be a focus, along with capacity

development for regional research and data analysis. The science presentations were organized to reflect the main research fields of TEA-START, which include 1) interactive changes of regional climate and ecosystems, 2) global change and regional coordinated responses, and 3) development and application of regional Earth system models. Key insights that emerged from the presentations and discussion included the need for regional data standardization and sharing, enhancing human dimensions of regional Earth system research, and embedding international networks into research activities.





Highlights of Temperate East Asia-START contributions to global change science in 2020-2021:

- START scientists co-authored the InterAcademy Partnership Statement on Biodiversity and Climate change interlinkages presented at the UN Convention on biodiversity COP15 in October 2021 and 26th UN Framework Convention on Climate Change (COP26) in November 2021. The statement recognized that climate change and biodiversity decline are major challenges that are interlinked and coupled in the Earth system, with complex synergies and trade-offs.
- START scientists contributed to a study on climate regime shifts and forest loss in the Amazon basin, which reported that the Amazon fire regime has been expanding from the flammable savannas to moist tropical forests and the fire season is initialized much earlier than two decades ago. (Reference: Xiyan Xu, Gensuo Jia, Xiaoyan Zhang, William Riley, Ying Xue. 2020: Climate regime shift and forest loss amplify fire in Amazonian forests. *Global Change Biology*, doi: 10.1111/gcb.15279. <https://onlinelibrary.wiley.com/doi/abs/10.1111/gcb.15279>)
- START scientists contributed to a study demonstrating that extreme temperature events will likely increase and cause severe damage to human society and natural ecosystem under climate change and urbanization. A recent study, published in *Geophysical Research Letters*, shows how urban expansion is attributed to intensified nighttime heat waves in China. The study was led by scientists from the Institute of Atmospheric Physics at the Chinese Academy of Sciences and TEA-START. (Reference: Shi, Z., Xu, X., & Jia, G. (2021). Urbanization magnified nighttime heat waves in China. *Geophysical Research Letters*, 48, e2021GL093603. <https://doi.org/10.1029/2021GL093603>)

PARNTERS

START's success relies on engaging strong and diverse partnerships at the intersection of science, policy and practice.

Over the years, START has forged collaborations with universities and research institutes, international global change research programs, intergovernmental and multilateral organizations, regional and international NGOs, and private foundations.

MAJOR PARTNERS AND SUPPORTERS INCLUDE:

African Academy of Sciences
Association Malienne d'Éveil au Développement Durable (AMEDD)
Belmont Forum
Centre for Complex Systems in Transitions, Stellenbosch University
Chinese Academy of Sciences
Chulalongkorn University
Climate System Analysis Group, University of Cape Town
Educational Partnerships for Innovation in Communities Network
Fonds de recherche du Québec
Future Earth
ICLEI - Local Governments for Sustainability, Africa
Institute for Global Environmental Strategies
Institute for Technology and Resources Management in the Tropics and Sub-tropics, TH Köln
Inter-American Institute for Global Change Research
Intergovernmental Panel on Climate Change
International Development Research Centre
International Science Council
JPI Urban Europe
National Aeronautics and Space Administration
National Science Foundation
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Red Cross Red Crescent Climate Centre
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United Nations Environment Programme
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United States Geological Survey
United States Global Change Research Program
University of Ghana
Visvesvaraya National Institute Of Technology
West African Science Service Centre on Climate Change and Adapted Land Use
World Climate Research Programme
World Meteorological Organization

For a more comprehensive list of partners: start.org/about-us/partners/

ORGANIZATION

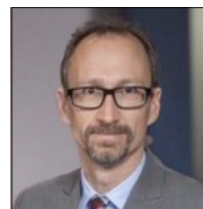
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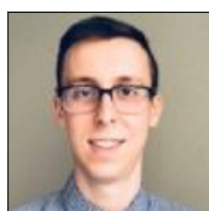
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Senior Program Specialist



Mariama Camara
Program Specialist



Mzime Murisa
Program Specialist



Clay Oboth
Administrative Specialist



Gulnara Reznik
Financial Coordinator

REGIONAL AFFILIATES AND CENTERS

START has a center for the temperate East Asia region ([TEA-START](#)) hosted by the Chinese Academy of Sciences in Beijing and a center for the Southeast Asia region ([SEA-START](#)) hosted by Chulalongkorn University in Bangkok. TEA-START specializes in Earth systems modeling for advancing knowledge on regional environmental change in Asia and processes and mechanisms of the East Asia monsoon. SEA-START specializes in strengthening understanding and action on adaptation and resilience in Southeast Asia linked to science-policy processes.

In addition to regional centers, START works through an affiliate approach based on long-term partnerships. Current START affiliates are at Thammasat University, the University of Ghana and the University of Cape Town. The Thammasat University affiliate relationship is through the Urban Futures and Policy research unit and focuses on urban resilience and adaptation. The University of Ghana affiliate relationship primarily focuses on scientific capacity development for adaptation research in drylands, and the University of Cape Town affiliate relationship primarily focuses on scientific capacity development for urban adaptation as well as on climate data literacy.

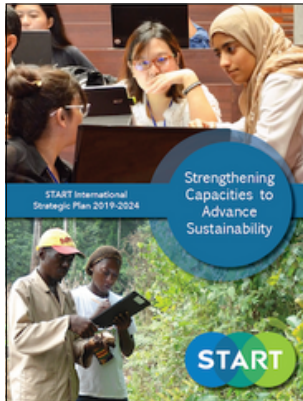
RIGHT: TEA-START
Annual Science Meeting
in Beijing (2021)

BELOW: Monitoring and
Evaluation Workshop for
Thailand's National
Adaption Plan and
Climate Resilience Index
(2020)

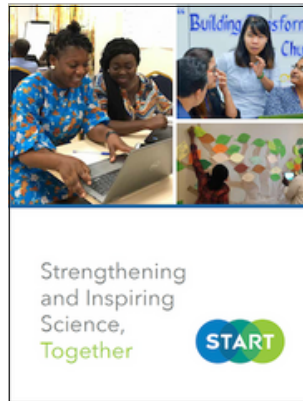


Photo: SEA-START

MORE ABOUT START



**START INTERNATIONAL
STRATEGIC PLAN 2019-2024**
November 2019



**STRENGTHENING AND
INSPIRING SCIENCE, TOGETHER**
October 2020



STARTcast
The STARTcast is a 2 season podcast created by START for early- and mid-career scientists.

OPPORTUNITIES IN SUSTAINABILITY

A twice-monthly email round-up of opportunities from and with-in the sustainability community.

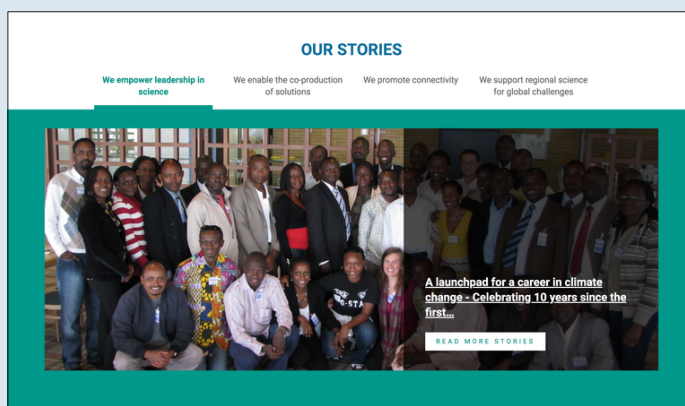


OUR STORIES

Since its founding in 1992, START has had a lasting impact on global change research communities in Africa and Asia.

START programs connect early career professionals across peer groups, promote co-produced solutions involving researchers and societal partners, support emerging science leadership, and amplify regional knowledge and perspectives in global discourse.

Learn more about how START strengthens science capacities that inspire solutions to critical sustainability challenges.



START provides opportunities for training,
research, education and networking that
strengthen scientific skills and inspire
leadership for advancing solutions to
critical sustainability challenges.



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