The African Youth Adaptation Solutions Challenge (YouthADAPT Challenge) is an annual competition and awards program for youth-led enterprises jointly organized by the Global Center on Adaptation (GCA) and the African Development Bank (AfDB) under the YouthADAPT pillar of the Africa Adaptation Acceleration Program (AAAP).

The first winners of the YouthADAPT Challenge were presented at COP26 during a dedicated award ceremony. Over 2,000 applications were received from which 10 winners were awarded. Winners receive seed funding of up to US$100,000 to develop their innovation and receive tailored business development training through a 12-month incubation and acceleration program.

The awarded enterprises target crucial environmental, social, and economic sectors affected by climate change, and present clear value propositions to scale up for higher impact as well as to create employment opportunities across Africa. The challenge also has a strong focus on women, with at least 50 percent of selected businesses being women-owned.
The challenge aims at being the beginning of a revolution of young business entrepreneurship on adaptation. By 2025, the YouthADAPT Challenge is expected to have reached 300 young innovators and youth-led enterprises.

Reflecting on the challenges and barriers they have faced in launching and growing their businesses, the winners provided their insights into how African governments can support young entrepreneurs through policy actions and programs.

We are here to appeal that the adaptation agenda should be a youth agenda, that youth dominate in Africa. And we are requesting that finance should target young people, youth-led initiatives and youth entrepreneurs. We are also requesting that global leaders should include young people in the planning, the design and the implementation of adaptation programs.”

Desmond Alugnoa
Co-Founder, Green Africa Youth Organization; GCA CEO’s Youth Advisory Panel
OVERVIEW AND DESCRIPTION OF THE YOUTHADAPT CHALLENGE

Introduction: Youth and Employment in Africa

Micro, small and medium-sized enterprises (MSMEs) are leading engines of job creation in Africa and account for a large part of economic output for the continent.¹ SMEs constitute 95 percent of Africa’s private sector² and provide an estimated 80 percent of jobs across the continent.³ At least 44 million formal MSMEs existed in Sub-Saharan Africa alone in 2018. Their growth, however, is considerably constrained by a lack of access to finance and markets, with 51 percent of the businesses requiring more finance than they have access to.⁴ Climate change also poses a threat to business growth and employment in Africa, with negative impacts already seen in the form of job losses, destruction to business assets, forced migration, disruptions to transportation routes and access to markets, risks to occupational safety and health affecting labor productivity, and reduced demand resulting from economic shocks and instability.⁵

Climate adaptation responses can, however, protect existing jobs, drive green job creation for adaptation, support the provision of other employment-related benefits such as healthcare and social protection, and provide opportunities for new economic activity and investments.⁶

There lies a considerable opportunity in mobilizing private-sector actors for adaptation efforts in Africa. The Private Sector chapter in the State and Trends in Adaptation 2021 report showed that collaboration and partnerships within the private sector (and with other stakeholders) can not only build resilience within the private sector, but can generate adaptation and resilience benefits for society at large. This is especially true of MSMEs, given that they make up a significant part of the continent’s private sector.⁷ Further, MSMEs are uniquely positioned to develop locally relevant and effective adaptation solutions, which in turn can significantly build the resilience of the communities in which they operate.⁸ Identifying potential business opportunities, incentivizing MSMEs, and promoting local entrepreneurship is thus crucial for creating employment opportunities and generating economic and social output in Africa.⁹

As the most educated generation ever in Africa, African youth today have high economic ambitions and provide an untapped potential to build resilience through their innovativeness, energy, and entrepreneurship. Indeed, Africa’s large and growing young population, estimated at over 1.4 billion in 2022 is one of the continent’s most valuable assets for growth. (The median age in Africa today is 18.7.¹⁰) Capitalizing on this presents an unparalleled opportunity for harnessing social and economic development in Africa and driving transformative adaptation at scale across the continent.¹¹

Despite market and investment opportunities, a lack of soft and hard skills, in addition to skills mismatch, limits the capacity of youth to take up evolving economic opportunities. Businesses run by young people also face major constraints to development from infrastructure deficits and lack of access to finance.¹² The Youth chapter in the State and Trends in Adaptation 2021 report offers a detailed analysis of the nexus of youth, employment and climate change adaptation in Africa.

Unlocking the untapped potential of youth in Africa to build resilience through innovative solutions and entrepreneurship can drive transformative adaptation at scale across Africa. It is important to engage and support young people in key investments and adaptation policies, increase accessibility of financial instruments, increase the visibility of private-sector adaptation action in Africa, and incentivize MSMEs through policies and by creating an enabling environment for entrepreneurship.¹³

African Youth Adaptation Solutions Challenge

In 2020 the Global Center on Adaptation (GCA) and the African Development Bank (AfDB) launched the Africa Adaptation Acceleration Program (AAAP), which aims to mobilize US$25 billion over five years to drive adaptation and resilience efforts in Africa through four pillars (see the Africa Adaptation Acceleration Program chapter for more information on the AAAP and its progress). Recognizing the need and opportunity for promoting the creation of green jobs for adaptation for youth, the Empowering Youth for Entrepreneurship and Job Creation in Climate Adaptation and Resilience (YouthADAPT) pillar aims to prepare a new generation of African youth for the transition toward green and climate-resilient development, as well as to combat poverty, promote sustainable job creation at scale, and improve the quality of life for young people in Africa.
The African Youth Adaptation Solutions Challenge (YouthADAPT Challenge) is an annual competition and awards program for youth-led enterprises jointly organized by GCA and AfDB under the YouthADAPT pillar of the AAAP framework. The challenge aims to strengthen inclusive growth and broaden investment and economic opportunities for youth in Africa, through strengthening and supporting youth-led enterprises to accelerate and scale up innovative solutions for climate adaptation and resilience.

The awarded enterprises target crucial environmental, social, and economic sectors affected by climate change and present clear value propositions to scale up for higher impact as well as create employment opportunities across Africa. The challenge also has a strong focus on women, with at least 50 percent of selected businesses being women-owned.

Winners receive seed funding of up to US$100,000 to develop their innovation and receive tailored business development training through a 12-month incubation and acceleration program. Here selected enterprises are supported to build their institutional capacity, help make their business commercially viable, position themselves to effectively utilize grants offered, and to also mobilize additional private capital. This is undertaken through training workshops tailored to provide practical skills in entrepreneurship and climate adaptation mainstreaming, and professional mentorship to enable the entrepreneurs to execute their business plans, boost the creation of green jobs for adaptation, and thereby support Africa’s continental effort toward climate resilience.

By 2025, the YouthADAPT Challenge is expected to have reached 300 young innovators and youth-led enterprises.
An Overview of the Application Process, Evaluation Criteria and Selection of the Winner

The competition targets young entrepreneurs between the ages of 15 to 35 and MSMEs in Africa that have demonstrated proof of concept, offer innovative solutions to climate adaptation and resilience, and have been operational for at least two years with a potential to scale up operations. Young entrepreneurs can respond to a call of expression of interest by submitting a for-profit business plan, from which those with the highest potential for driving adaptation efforts are identified. In 2021, the African Youth Adaptation Solutions Challenge had 1600+ applications (Figure 1). Most businesses that applied were based in either East Africa (684) or West Africa (722). In East Africa, a considerable percentage of the applications were in Kenya (392), and in West Africa, most of them were in Nigeria (516).

After careful deliberation, 20 shortlisted businesses were requested to submit a three-minute video of their business idea. Of these, 85 percent focused on the adaptation of the agricultural sector and the remaining 15 percent on waste management to prevent waterway clogging and floods.

The adaptation solutions delved into the topics of:

- Providing high-quality drought-resistant seedlings to farmers
- Providing climate-smart agriculture advisory systems
- Providing early-warning systems to avoid waterway clogging
- Providing capacity-building activities in the use of drought-resistant seedlings, irrigation systems, etc.
- Collection and upcycling of plastic waste to avoid waterway clogging
- Agroforestry and land conservation as a protection from drought, strong winds, etc.
- Vertical farming hydroponics for agri-efficiency
- Post-harvest loss prevention through produce dehydration
- Solar-powered smart irrigation technology to avoid water waste
- Organic fertilizer production and cultivation improvement to enhance nutrient retention

Then, the submitted videos were screened by a distinguished jury nominated by GCA and AfDB and showcased at the Conference of the Parties (COP26) in Glasgow in the Africa Pavilion.

Figure 1. Applications to the Youth Adaptation Solutions Challenge by Region

![Figure 1: Applications to the Youth Adaptation Solutions Challenge by Region](image-url)
The first winners of the YouthADAPT Challenge were presented at COP26 during a dedicated award ceremony for the challenge. Over 2,000 applications were received from which 10 winners were chosen. The event was led by a distinguished panel comprising of GCA’s CEO Prof. Dr. Patrick Verkooijen, CEO of the Climate Investment Funds (CIF) Ms. Mafalda Duarte, President of the AfDB Dr. Akinwumi Adesina, Cabinet Secretary for Environment in Kenya Mr. Keriako Tobiko, and the Regional Director for GCA Africa Prof. Dr. Anthony Nyong.

The panelists stressed the importance of turning Africa’s demographic advantage into an economic dividend by transforming the continent’s young and dynamic population into innovative business leaders and climate change adaptation solution providers. The panelists also urged the winners to share their visions of success with other emerging business leaders following them, because the challenge aims at being the beginning of a revolution of young business entrepreneurship on adaptation. The winners highlighted that the grant would allow them to scale up their innovations by increasing their production capabilities (such as through the introduction of machinery, more staff, greenhouse construction, etc.) and training capacities (e.g. training with farmers and their own training with experts in business development), expanding their technology acquisition capacity, broadening their service provision, creating more jobs, and extending their networks to impact even more people.

During the implementation phase, training is provided as a bundled service, allowing for networking and information sharing among the enterprises on the best practices with a pan-African view, which then integrates into their respective business processes. To provide the entrepreneurs with the necessary tools for scaling up their businesses, training workshops were given on the topics of cash flow management, budgeting, fundraising, and digital marketing. Later, to mainstream adaptation into their businesses, training workshops were conducted on understanding climate change, adaptation fundamentals, adapting MSMEs to a changing climate, and the adaptation finance landscape.

The Accelerator Program

A comprehensive gap analysis of each of the winning enterprises was undertaken by the Kenya Climate Innovation Center (KCIC), with the collaboration of GCA and AfDB, to identify individual needs and provide targeted incubation and mentorship support. The gap analysis was done by conducting interviews, reviewing business plans, and using KCIC and AfDB gap analysis and climate adaptation tools. Some of the most frequently mentioned needs included making the businesses ready to attract investors, the need for digital marketing, and climate risk management.
The accelerator program is implemented alongside grant provisions released in tranches determined by milestones achieved. The YouthADAPT Challenge provides the winners with a sustainable funding model and an expert mentorship component—allowing them to access funding and training to support their short-term goals while also creating an environment for accessing funds that will help them unlock their long-term goals (Figure 2).

Figure 2. The Sustainable Funding Model for the African Youth Adaptation Solutions Challenge Enterprises

MSMEs with innovative adaptation solutions

- Seed funding to support their short-term growth
- Connection to private equity and loan products for longer-term growth
- Mentoring Program with customized business development skills and resources to scale up climate adaptation innovations
- Partnership, knowledge sharing, exchange and learning

MSMEs with sustainable finance and the tools to scale up their adaptation innovation

YOUTHADAPT WINNER PROFILES

Interviews with the ten YouthADAPT Challenge winners were conducted to learn what impact the grant and accelerator program have had on their businesses thus far. The winners were asked about the challenges they faced in launching and growing their businesses, about the impacts of the climate change adaptation and resilience and social elements of their businesses, and about their recommendations for how governments in Africa can support young adaptation entrepreneurs through policy actions and programs.

The winning enterprises provide climate adaptation and resilience solutions in critical social and economic sectors affected by climate change, including agriculture, waste management, water resources and sanitation, renewable energy and energy efficiency, and ecosystem restoration.
Overview: Projections show that Cameroon is at risk of potentially damaging and life-threatening river floods, which are expected to occur at least once every 10 years. Poor waste disposal can exacerbate this by clogging drains. Other consequences of poor waste management include respiratory issues when waste is burned, shortened animal lifespans when they consume waste, and the contamination of water bodies when waste is dumped into canals, oceans, and wetlands.

To help communities mitigate the risk of flood, Bleaglee Waste Management first identifies waste in drainage channels and waterways using drones that can quickly inspect and detect the type of waste that is clogging water systems. In parallel, the company identifies and works with individuals and businesses that want to dispose of waste. The company targets individuals and households, businesses, government and non-governmental organizations, and vulnerable communities. It communicates with them directly through social media and text messages. The company works with informal waste collectors and youth environmental groups (eco-groups) to pick up and collect waste. This waste is sorted and sold to recycling companies in the national and international markets. Plastic waste is then converted into fuel and sold to clients.

Revenues and Costs: The company generates revenue from providing drone services to waste management and recycling companies in the detection of waste in waterways (34.34 percent), digital and recyclable waste collection and sorting (22.26 percent), and selling fuel from converted waste (43.38 percent) (as per the 2020 financial statement). The highest costs for the company’s operations come from salaries, infrastructure/warehouse costs, and waste sourcing and transportation.

Challenges: The development and implementation of the project required extensive research and interviews with local communities. These efforts revealed that raising awareness of the impact of waste on floods was key to the project, as poor waste disposal is a major factor for drainage clogging in Cameroon. Future challenges identified are navigating governmental regulations on drone usage, advocating for the proper design of drainage systems, and keeping people motivated to continue reducing their waste. In response, Bleaglee is implementing a reward system to motivate continued waste reduction behaviors.

Contribution to Adaptation and Resilience:

Early-warning Systems: The company provides early-warning systems for multiple hazards such as flooding, water contamination, and potential respiratory illness. Currently, Bleaglee, with the help of their drones and over 300 part-time waste collectors, has been able to clear 3,000 tons of waste from waterways, reducing the risk of flooding for nearby communities.

Protection of Wetlands: The company protects wetlands through clearing poorly disposed of waste in drainage channels and waterways. The company also works with municipal councils to design better drainage systems and policies that protect wetlands. Further, the company is mapping recycling centers to create a toolkit to guide people on where and how to properly dispose of their waste.

Social Impact: The company contributes to social-economic empowerment of vulnerable communities through enabling behavioral change and inspiring intrinsic motivation for environmental stewardship. The company achieves this through practical learning on proper waste disposal and the value and use of segregated waste. Bleaglee currently employs 20 workers (12 women, 8 men), all of which are youth, and works with 19 casual workers (13 women, 6 men). Bleaglee also allows for waste collectors to receive 45 percent of the recycling revenue, providing them with an alternative source of income.

YouthADAPT Grant: The grant awarded under this program will help expand Bleaglee’s capacity to remove waste from waterways and to increase revenue generated from waste by enhancing their recycling facilities. The grant will also allow the company to continue offering their training programs on waste management. The company aims to train and give jobs to over 10,000 informal waste pickers by 2026.
Sustainable Builders, Northern Province, Zambia

Overview: According to the World Food Programme, in 2022, 48 percent of the population in Zambia is currently unable to meet their minimum calorie requirements. The country has 1.5 million smallholder farmers, who produce most of the country’s domestic food supplies and are also extremely vulnerable to climatic shocks.

Sustainable Builders addresses this issue by focusing over the last 10 years on three areas in the agriculture sector: small business development, testing digital solutions, and offering structured markets in the supply chain. The company targets smallholder farmers and communicates with them directly through member organizations such as cooperatives and marketing unions. The business links and improves the functionality of the agriculture supply chain, and supports the development of a conducive environment for farmer behavior change toward a more diverse range of production options. This results in increased output and productivity while addressing critical food security issues. Over the 10 years that it has been operational, the business has grown from offering capacity building to organizations and cooperatives, into a project implementer, and now operates as a fully sustainable enterprise.

Revenues and Costs: The company’s revenues come from selling seeds (70 percent), providing training services (20 percent), and seed export (10 percent). The most important costs of the company are operational. While salaries for management and rentals insurance costs are constant, other costs such as wages and logistics change depending on the season.

Challenges: The company had to gain the trust of its clients and grow from being a company that offered training for farmers to being a fully established sustainable enterprise trusted by investors. It has had to deal with unstructured markets within the agricultural supply chain, which decreases profit margins for farmers, deters farmers from diversifying their crop production, and poses logistical challenges for the business.

Contribution to Adaptation and Resilience:

Drought-resistant Seeds: The company supplies smallholder farmers with drought-resistant legume seeds that are manufactured based on regional climatic conditions and rainfall patterns. It focuses on groundnuts, cowpeas, and pigeon peas. The company also provides farmers with training and technical efficiency services focused toward building their adaptive capacity, the need for which has become especially apparent in recent years. Specifically, training and support are provided on crop diversification and good agricultural practices to ensure that farmers increase their yields even during periods of drought.

Digital Solutions: Sustainable Builders works with engineers and rural farmers to identify, co-design, and test digital solutions that can potentially create efficiencies and improve commercial relationships between all levels in the agricultural supply chain.

Social Impact: Sustainable Builders provides social impact through jobs and livelihood creation and promotes food security among communities. By offering structured markets the company contributes to increased transparency in the agriculture sector, thereby allowing farmers to sell their crops at fair and profitable prices, promoting equity within the supply chain. Further, improved storage practices will attract bulk buyers who offer better market prices and provide income to the farmers during off-seasons. To date, the company has captured 2.25 percent (13,500 farmers) of the serviceable market in the northern parts of Zambia. It currently operates within one district and is planning to expand to two more districts. The company has 9 staff (5 women, 4 men), all of which are youth, and 17 casual workers (5 women, 12 men).

YouthADAPT Grant: With the YouthADAPT Challenge funds, the company aims to secure digitalized warehouses for grain storage to reduce post-harvest losses caused by poor storage practices. Winning the YouthADAPT challenge has helped Sustainable Builders establish itself as strong competitors within the agriculture sector and it has increased the company’s autonomy as a business. The funding also enables the company to test and introduce more agricultural digital solutions, which in turn increases profits for the farmers. The company also envisages expanding its operations from one region to three by the end of the year.
Global Farms and Trading Company Limited, Tamale, Ghana

Overview: According to projections, Northern Ghana is at a high risk of experiencing river floods, water scarcity, extreme heat, and wildfires, all of which will have a severe impact on agricultural systems. These impacts make it essential to work on adapting the agricultural system in Ghana.

Global Farms is a producer of grains (maize, rice, and soybeans) promoting adaptation and resilience among smallholder farmers in the northern parts of Ghana. The company seeks to increase food security, reduce poverty, empower women, and safeguard ecosystem services through the practice of conservation agriculture. The company’s three main operational strategies are: to organize and build capacities of smallholder farmer groups to become climate adaptation and resilience-oriented out-growers; to increase the volume of commodities traded through an increase in production yields while ensuring ecosystem services are protected; and to provide an efficient and sustainable market system to smallholder farmers while ensuring company profitability.

Revenues and Costs: The company targets processing companies, smallholder farmers, food vendors, and individuals. It communicates with its customers directly through social media platforms, local radio stations, and registration. The company generates its revenues from selling maize (30 percent), soybeans (32.55 percent), and rice (37.47 percent) (as per its 2020 financial statement). The main costs are operational, related to training smallholder farmers, farm inputs, human resources, and acquiring machinery and farming implements.

Challenges: Challenges with production processes include decreased availability of inputs and cash flow interruptions as a result of COVID-19, as well as disturbances caused by climate risks such as drought and flooding. Insufficient financial resources to expand and champion climate action strategies, and lack of expertise in climate resilience strategies for the dissemination of climate information, are other challenges.

Contribution to Adaptation and Resilience:

Integrated Farming: The company works with the forestry commission to provide training to smallholder farmers that focuses on intercropping their grain with trees around their farms. This enables farmers to adapt to effects of climate change as the trees act as wind breakers for their crops and reduce the soil erosion that can result from heavy rain and flooding.

Conservation Agricultural Practices: The company, through the support of Savanna Zones Agriculture and Implementation Project (SAPIP), provides training to the small farmers they work with on good conservation agricultural practice. This includes training on zero or minimum tillage; measures to control soil erosion, flooding and bushfires; and methods of pest control that do not have an effect on the environment.

Social Impact: The company enables smallholder farmers to increase their household incomes and create employment opportunities in their communities. The company also enhances the availability and affordability of high-quality food. Global farms also creates social impact through women and youth empowerment: of the 500 smallholder farmers, 341 are females, and 334 are youth. The company focuses on expanding the coverage of smallholder farmers from 500 to 10,000 over the next five years. The company currently employs 13 permanent workers (5 women, 8 men), all of which are youth, and 60 casual workers (35 women, 25 men).

YouthADAPT Grant: Through the grant, Global Farms will enhance its capacity to provide training to smallholder farmers on the adoption of agricultural conservation practices, as well as assist them in accessing quality and climate-tolerant seeds to improve production yields. The funds will also help Global Farms to transport, store, and sell the produce to bulk buyers and negotiate better prices for the farmers while reducing the cost of transport and marketing for the farmers.
Simkay Green Global Ventures, Kaduna State, Nigeria

Overview: The agricultural sector in Nigeria is projected to be heavily impacted by flooding and drought. Natural hazards have also resulted in land and infrastructure degradation from erosion, direct crop failure from floods and heavy rains, and nutrient leaching, all of which puts a heavy burden on the Nigerian agricultural system.

Simkay Green Global Ventures is an agro-processor of tomatoes and potatoes, working on the adoption of improved cultivation techniques for smallholder farmers in rural Nigerian communities to avoid off-season shortages and high levels of post-harvest waste among tomato farmers. The company facilitates training on vertical sack farming and provides implementation support. This type of farming does not rely on rain, optimizes land use, and increases crop productivity and yield for farmers. It also protects farmers from damages caused by flooding. The resulting yield is transported to a factory where the vegetables are sorted, washed, dehydrated, and ground. After production, the packed product is distributed through physical direct purchases, social media handles, and a network of the retail distributor. The company targets students, working professionals, and food vendors. It communicates with its customers directly through sales representatives, online sales channels, and indirectly through distributors.

Revenues and Costs: The company generates its revenues from selling tomato powder (58.69 percent) and potato powder (41.30 percent) (financial statement 2021). The main costs are attributed to operations, mainly the costs of machinery procurement, raw material procurement, marketing, human resources, and production overhead costs.

Challenges: The short seasons of tomato cultivation (four months of the year) posed a challenge for Simkay as it saw decreased levels of engagement and interest from farmers during off-season production cycles. This was overcome by introducing climate-smart farming techniques to farmers that enabled year-round production. Another challenge faced in growing the business was securing funds to move from fabricated to mechanized machinery.

Contribution to Adaptation and Resilience:

Vertical Sack Farming: The company promotes the use of vertical sack farming for smallholder farmers, which is a low-cost technology for planting crops into the sides and tops of large sacks of soil. The type of farming does not rely on rain, optimizes land use, and increases crop productivity for farmers. On average, a single sack contains 50 to 70 vegetable plants. The vertical sacks use less water compared to vertical farming, allowing farmers to grow crops even during periods of drought. It also protects the farmers from damages caused by flooding. The company has successfully trained 400 farmers in vertical sack farming thus far.

Post-harvest Losses: The company offtakes produce from the farmers, thereby cutting out intermediaries, increasing farmers’ income, and reducing post-harvest losses. It then dehydrates, grinds, and packages the vegetables and sells the powder to the Nigerian market. Dehydration enables farmers to adapt to changing crop-growing seasons caused by dry spells, increasing income during off-seasons and contributing to food security.

Social Impact: Simkay provides social impact by creating jobs and improving the livelihoods of the farming communities involved. The company currently employs 10 workers (6 women, 4 men), all of which are youth, and works with 53 casual workers (38 women, 15 men). It currently has 25 young people working in production areas and aims to have 80,000 workers by the end of the year. It has a current engagement of 22,000 smallholder farmers and aims to work with 100,000 farmers by 2023. Through selling tomato powder during the off-season, the company contributes to combating food scarcity and improving health in Nigeria, as the powder retains 100 percent of its nutritional quality during the dehydration process.

YouthADAPT Grant: The grant will aid Simkay in promoting climate adaptation through the acquisition of a 5,000-ton processing machine (4,000 tons more than its current machine), which can produce 80kg of tomato powder daily. Funds will be invested in the construction of a cold storage facility, which will greatly increase the institution’s capacity to lengthen the shelf life of perishables and create a sustainable food system for better food security. The grant will also help the enterprise expand its engagement with farmers from 22,000 to 100,000 by 2023. Before the YouthADAPT challenge, Simkay was working in four states. It now predicts that, with the funds and increased capacity gained through the program, it could have 20 states in its database by the end of the year. The company’s customer base has also increased, and it is now looking at exporting to international markets. The mentorship has helped the company to draw up business strategies, improve marketing strategies and operational processes, and increase its investor readiness.
Soupah Farm-en-Market Limited, Nigeria

**Overview:** Projections show that parts of Nigeria are at risk of extreme heatwaves resulting in heat stress, which is expected to occur at least once in the next five years. Significant impacts are expected as well on the country’s water resources, which will impact the agricultural systems in Nigeria.

Soupah Farm-en-Market Limited is a women-led agro-producer and distributor based and operating in Ibadan, Nigeria, that leverages controlled-environment agriculture practices and resource-smart growing technology to change the way food is grown and distributed. The company reduces the impact of weather conditions on the production and transportation of food in the community by growing vegetables such as lettuce, kale, leafy greens, and herbs using hydroponic systems. The company also innovatively operates its farm from the rooftop of a building within the city to grow, harvest, and sell directly to consumers at affordable prices. Unlike traditional farming, hydroponics is simply planting food on water and nutrients. This allows the company to plant with 95 percent less water and eliminates the need for harmful fertilizers and chemicals, and also machinery. By farming on rooftops in cities, the company does not require any new land to farm, reduces CO₂ emissions from long-distance food transportation, and ensures that the produce reaches consumers quickly and in its freshest form. The company's resource-smart growing technology can grow up to 3 tons of fresh produce within a 650-square-meter area. By utilizing controlled-environment agricultural practices, the company can grow produce all year round. The grant will allow the company to hire more permanent staff and increase productivity.

**Revenues and Costs:** The company targets individual customers who go directly to the company’s urban farm to buy produce. The company also sells to institutional customers such as hotels, restaurants, and schools. By percentage, the company generates its revenues from selling fresh produce (25 percent), tea and spices (39 percent), and juice and smoothies (36 percent) (financial statement 2021). The major costs come from the company’s operations including payroll, cost of goods sold, electricity and telephone bills, and rent, among others.

**Challenges:** Hydroponics is a capital-intensive venture, and it was difficult to secure funding for it, which led to the founder, Ifeoluwa Olatayo, selling personal assets to kickstart her business. Further, there was a knowledge gap in Nigeria about the technical needs of hydroponics, which made her delve into a variety of resources on hydroponics to try to replicate it in the Nigerian context. She managed to get a tutor through the International Institute for Tropical Agriculture, who supported her to address the knowledge gap.

**Contribution to Adaptation and Resilience:**

**Hydroponic Farming Systems:** The company uses a hydroponic system of farming. Unlike traditional farming, this requires fewer resources (including those needed for sustainable farming) by using 95 percent less water, no machinery, no new land, and no harmful fertilizer. Hydroponic farming techniques also ensure higher yield by up to 30 percent than the traditional methods of farming and reduce the growing time by half. The hydroponic farming system is also grown indoors in controlled environments, thus protecting the crops from harsh weather conditions due to climate change.

The reduced water level required ensures that the crops can be grown year-round even during periods of drought. The company’s hydroponic farming system also has climate mitigation benefits due to its localized production on rooftop farms, and the company produces its products in urban areas cutting down the amount of fossil fuel needed to produce and transport food. So far, Soupah Farm has reduced malnutrition for 4,000 consumers within its impact area by making high-quality food accessible and affordable.

**Social Impact:** The company makes a social impact through creating jobs and livelihoods. It currently employs 16 permanent workers (11 women, 5 men). Furthermore, the company works with two casual workers, a man and a woman. The company impacts 317 smallholder farmers, 224 men and 93 women, of whom 52 percent are youth as off-takers of their products. The company also supports them by providing agronomy services, which translate to better yields and more household incomes for the farmers.

**YouthADAPT Grant:** The grant will promote climate adaptation by improving the water-use efficiency of the hydroponic farming model, helping communities cope with water scarcity and drought. Before the YouthADAPT award, the production was around 150kg per production cycle (26 days), and the company envisions it going up to 650kg with the construction of new farms to a total of four. The processing capacity to produce herbs and juices using produce is projected to be scaled up from 200kg per week to 600kg. Furthermore, the grant will allow the company to increase its staff to 30 permanent workers, of whom 70 percent will be women.

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*Photo: Nodar Gochashvili/Shutterstock*

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“*The YouthADAPT grant will help us to increase our production capacity five times, and the training has helped reduce the knowledge gap in-house.*”

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*Exposure to climate change impacts*

*Drought* *Heat Stress*
Exposure to climate change impacts

“Companies that promote a green and circular economy have higher chances than before of attracting investors because this is the age of sustainability.”

Yewande Adebowale Fela Akinse

Overview: Plastic pollution has become one of the most pressing environmental issues in Nigeria, impacting communities by clogging drainage systems and contributing to flooding. Water waste also has many cascading effects, one example being environmental pollution that causes health problems. About 90 percent of plastic waste in Nigeria is not recycled, and this has resulted in over 5 trillion items of plastic floating in canals and oceans.

Salubata Technological Innovations Limited is a shoe design and manufacturing company based and operating in Nigeria since 2018. The company seeks to convert plastic waste into affordable footwear, simultaneously generating income and reducing waste. The company uses recycled plastic taken out of waterways and the sea as raw material to make shoes. Its operations help reduce floods caused by clogged drainage systems and potential health problems caused by water waste, as well as reduce the global carbon footprint by avoiding the need for newly produced plastic. The company targets individuals and the mass market through its B2C customer segment, and retail and franchise through its B2B segment. It communicates with customers directly through direct calls, email, and meet-ups. It is currently working to scale its operations beyond Africa, to Europe and North America.

Revenues and Costs: The company generates 41.66 percent of its revenues from its B2B operations and 58.33 percent from its B2C operations. The most important costs for the business operation come from rent, human resources, material acquisition, logistics, and maintenance.

Challenges: In its early stages Salubata had difficulties accessing funding. It is currently facing challenges in building strategic partnerships, particularly B2B partnerships.

Contribution to Adaptation and Resilience:

Plastic Waste Management: Most of the waste that clogs drainage systems and waterways is plastic waste. By reducing this plastic waste through recycling and upscaling, the company protects drainage systems and waterways, reducing flooding in urban areas where the waste affects communities the most. Recycling of plastic waste also significantly reduces its impact on the environment and wetlands. So far, Salubata has processed 1 million tons of plastic waste. The company is planning to introduce blockchain technology to increase transparency in the sourcing of the plastic waste.

Social Impact: The company’s social impact is through creating jobs and livelihoods. It currently employs 10 permanent staff (5 women, 5 men) and works with 4 casual workers (3 women, 1 man), all of whom are youth. Additionally, Salubata works with about 50 waste collectors, mostly women, by offering payment for waste collected. It has designated 5 percent of its profits to empowering women in local communities.

YouthADAPT Grant: The grant funds will be used to support Salubata’s production capacity, which will increase its waste removal efforts from canals and dumpsites, thereby minimizing the effects of floods caused by extreme rainfall. The training received through the accelerator program has helped the team with structuring the business, including training on tax, accounting, filing annual returns, getting the business ready for investment, and ensuring all documentation and paperwork is up to date. The mentorship has helped to improve business management and to link Salubata with potential B2B customers who are exploring the sustainability aspect of their business.
Overview: Kenya is projected to experience increased short-term crop failures and long-term production declines due to changes in precipitation patterns. Furthermore, production losses may be intensified by indirect impacts of drought and flooding (increased insect, disease, and weed infestations; soil degradation due to soil erosion and runoff).

To address these issues, Irri-Hub Ke supplies and installs climate-smart irrigation technologies that promote water security and mitigate the effects of drought, extreme heat, and changing rainfall patterns on crops. Irri-Hub’s activities include supplying farmers with drip irrigation options, greenhouse technology, eco-friendly water-harvesting options, and mulching technology. The drip irrigation systems are powered by green energy such as solar power. The company targets smallholder farmers in arid and semi-arid areas and communicates with its customers directly through social media, farmers’ forums and expos, and training activities. The company also offers farm planning services provided through field teams, and remote digital support through the company’s digital platform. By using Irri-Hub’s products and services, customers benefit from sustained weather resistance, affordable energy, an alternative to rainfed agriculture, modern technology, and water conservation through water-harvesting.

Revenues and Costs: The company generates its revenues from its provision of climate-smart irrigation systems to smallholder farmers (financial statement 2020). The main costs are attributed to inventory purchase, rents and rates, wages, travel expenses, and repairs and maintenance of the irrigation systems.

Challenges: Awareness of the availability of technologies and their usage among farmers. The cost of technologies also posed a challenge when establishing the business.

Contribution to Adaptation and Resilience:

Irrigation Technology: The company offers climate-smart irrigation systems ranging from sprinklers to drip systems. The smart irrigation systems enable farmers to sustainably increase productivity and climate resilience by reducing reliance on rainfed agriculture. The water storage component enables the farmers to effectively adapt to drought-related challenges by ensuring water is available throughout the year, and in turn increasing food security. Irri-Hub has helped set up 1,862 irrigation systems benefiting 15,000 farmers.

Greenhouse Technology: Irri-Hub’s greenhouses protect crops from climate change effects such as very heavy rain, very high and low temperatures, and high wind intensity. Farmers can produce crops under a controlled environment to support year-round production. The company sells greenhouses to NGOs and cooperatives, each of which works with groups of between 15 and 25 farmers. Since inception, it has installed 136 greenhouses.

Water Harvesting: The company’s water-harvesting products enable farmers to harvest excess water during the rainy season and store it for use during periods of drought. The technology also offers flood protection as water is directed to storage dams, reducing flooding on farms. The company has installed 152 water-harvesting products to date, translating into the conservation of 10 million cubic liters of water.

Mulching Technology: Mulching paper reduces water loss from the soil through evaporation. During periods of drought, the mulching paper assists farmers in conserving moisture already in the soil and reduces the amount of water used. The mulching technology also prevents soil erosion, thereby protecting crops from excess rainfall. The company has thus far set up 100 items of mulching technology across the country, which amounts to approximately 4,132 m² of mulching paper.

Social Impact: Irri-Hub’s social impact is through job and livelihood creation. The company empowers and supports farmers to increase their adaptive capacity, improve yield, and enable year-round production, resulting in increased household income for farmers and allowing them to create employment opportunities in their communities. The company currently employs 8 permanent workers and 5 casual workers, all of which are youth. Combining all technologies installed, the company has been able to reach 15,000 farmers country-wide.

YouthADAPT Grant: The grant has allowed the company to acquire more inventory and expand its implementation of climate-smart irrigation systems. The funds have been used to invest in R&D with the aim to automate irrigation systems and create a pay-as-you-go system for farmers. The accelerator program has helped Irri-Hub to redefine its business model, streamline and align company policies to the company’s mission, adjust pricing systems, and improve marketing strategies. The company will soon open a second branch to help reach more remote farmers.
**Mumita Holdings Limited, Cameroon**

**Overview:** In Cameroon, agriculture is largely rain-dependent. With increasingly unpredictable rainfall patterns together with changes in pest status and dynamics, planning for farmers is complex. Climate variability can strain production capacity, impose extra business costs, and cascade into market prices.21

Mumita Holdings produces African indigenous vegetables using greenhouse technologies and the implementation of irrigation systems to support year-round production. The company implements innovative technological and group-focused interventions within the African vegetable supply chain to ensure sustainable production; quality and quantity of vegetables; and efficient post-harvest handling, transportation, processing and conservation, marketing, and distribution. The company targets female farmers in rural areas engaged in African indigenous vegetable production, convenience shops, supermarkets, and individuals. The company communicates with farmers through partnerships with traditional councils and regional/division delegations of agriculture, and with its other customers directly through radio campaigns and in-person meetings.

Mumita has two overall objectives: to build sustainable and empowered vegetable farmer networks armed with modern sustainable production tools to support year-round production; and reduce food insecurity by processing fresh vegetables into semi-finished dehydrated nutrient-rich vegetable products that meet consumers’ expectations and market standards.

**Revenues and Costs:** The company generates its revenues from the provision of low-cost greenhouses (54 percent), solar-powered irrigation systems (33 percent), and selling dehydrated vegetables (13 percent). The most significant cost for the company’s operation is the vertical integration cost of building its raw material supply chain. Other costs include maintenance of machinery, logistics, capacity building, packaging, and customer acquisition.

**Challenges:** Challenges include accessing farmer networks and working against the mindset that its members are too young to run a business. Side sales of farmers may pose a challenge to the company in the future.

**Contribution to Adaptation and Resilience:**

**Greenhouse Technology:** The company offers low-cost greenhouse technology solutions to vegetable farmers, which protect crops from climate change effects such as very heavy rain outpours, very high and low temperatures, and high wind intensity. Crops are protected from these extreme elements and enable the farmers to produce crops under a controlled environment, supporting year-round production. The company has set up five greenhouses through cooperatives.

**Irrigation Systems:** The company also offers solar-powered irrigation systems, ranging from sprinklers to drip systems, to support farmers’ production activities. The irrigation systems enable the farmers to produce year-round without depending on seasonal rainfall. The irrigation systems also help the farmers adapt to drought conditions by allowing them to farm even during periods of severe drought. The company has sold 15 irrigation systems to cooperatives and hired out another 5.

**Post-harvest Losses:** The company dehydrates vegetables to increase the shelf life of fresh produce, thereby reducing post-harvest losses. Increasing the shelf life of fresh produce also contributes to increased food security. The company currently supplies supermarkets with up to 50kg of dry vegetables weekly during the dry seasons.

**Social Impact:** The company enhances social resilience by creating jobs and improving livelihoods, especially for rural women farmers, though education on climate-smart agricultural practices, enabling access to equipment, and facilitating market access. The ability to produce and consume vegetables year-round increases income levels of the farmers and contributes to maintaining cultural heritage. The company currently employs 30 workers (18 women, 12 men), all of which are youth, and works with 40 casual workers. It is currently working with 20 cooperatives of between 15 and 40 people, with a network of anywhere between 1,500 to 4,000 smallholder farmers.

**YouthADAPT grant:** The grant will contribute to the construction of a cooling plant, the purchase of new machinery to increase production of dehydrated vegetables, and a warehouse for operation space. The funds will also help to purchase packaging in store, thereby cutting the total cost of final product prices to customers, supermarkets, and retailers. The challenge has already helped build capacity within the company and to increase and identify new networks that will allow access to new markets.
Maima General Dealers, Zambia

**Overview:** For Zambia, rainfed agriculture accounts for most of the planted area, and is practiced largely by smallholder farmers. Climate variability and natural phenomena like drought can have an impact on the vegetation available for open grazing livestock production. Maima’s hydroponic millet fodder offers a solution to this problem because production uses only water in a controlled environment, reducing the impact of climate variability.

Maima General Dealers Limited is an agribusiness enterprise operating within the small livestock sub-sector in Mwembeshi in the Central Province of Zambia. It runs a small livestock processing facility for chickens and goats. The company keeps capacity of commercial chicken layers to a maximum of 5,000 birds, broilers to a maximum of 5,000 birds, and local free-range chickens to a maximum of 2,000 birds. The company buys chickens and goats from surrounding farmers to process and sell to established markets. The initiative provides farmers with a stable market and helps them become climate-resilient. The company targets local retailers for its products including shops, restaurants, hotels, lodges, and supermarkets in Lusaka, Zambia. It also supplies its products to the Democratic Republic of the Congo through a partner organization called Mbombo Investments Limited. The company communicates with its customers directly through physical interactions by visiting their business premises.

**Revenues and Costs:** The company generates its revenues from selling eggs (54.75 percent), chicken meat (41.64 percent), and goat meat (3.61 percent) (financial statement 2021). The highest costs for the company’s operation are for the chicken feed.

**Challenges:** Awareness gaps in the areas of climate risk and management approaches. There is a need for access of information on how to mainstream and track progress of the adaptation solutions that the business is providing.

**Contribution to Adaptation and Resilience:**

**Hydroponic Fodder:** The company produces and promotes the production of hydroponic millet for smallholder farmers to feed their livestock. The hydroponic millet fodder is grown using millet seeds that have low water requirements and are broadly available in Zambia. This offers solutions to farmers who do not have large pieces of land for open grazing and feed production and can aid those affected by poor vegetation growth due to land degradation and climate change.

**Social Impact:** The company currently employs 23 workers (7 women, 16 men). All permanent employees are youth. The company supports smallholder farmers by providing them with parent stock for free-range chickens as well as training to improve their yield through the usage of hydroponic fodder to feed their livestock even during periods of drought. This translates to improved household incomes and livelihoods for farmers. The company works with 1,250 smallholder farmers clustered in 25 cooperative societies consisting of 50 farmers each.

**YouthADAPT Grant:** The grant will be utilized, firstly, to expand the company’s greenhouse facility, increasing the production of hydroponic fodder that can act as a safety net for those impacted by climate variability. Secondly, the grant will also help Maima to expand its training provision to farmers on high-quality hydroponic fodder production to improve the health of their livestock. Finally, the YouthADAPT grant will help the company in the construction of a cold room, preventing post-harvest food loss and a loss of income for the farmers. Furthermore, with the award, it will be able to go from providing 18 direct jobs to 200, with a focus on being 70 percent women and 30 percent men.
Kimplanter Seedling and Nurseries Limited, Kenya

**Overview:** Kenya is highly exposed to droughts and floods. Droughts affect the highest number of people and have the greatest economic impacts in the country. Droughts are often country-wide, but generally the most severe impacts are in the country’s arid zones. In the past 100 years, 28 droughts have been recorded and appear to be increasing in frequency.23

Kimplanter Seedlings and Nurseries Ltd (Kimplanter) operates from Ruiru Sub-County, Kenya, and has three branches across the country. The company specializes in vegetable, fruits, and tree seedling propagation. The company buys certified seeds from reputable seed companies, sows them in propagation trays, takes care of them during the nursery stage and, when ready, sells them to farmers as ready-to-transplant young crops. The seedlings are drought-resistant and can grow in harsh climatic conditions. They are selected varieties that can adapt to dry and hot conditions and low soil moisture content. The company also provides farmers with inputs on the best crop management practices such as plant spacing, crop protection, and post-harvest practices to improve production, maintain quality, and generate some income from yields. The company targets large-, medium-, and small-scale, and subsistence farmers. It communicates with its customers directly through farm visits, telephone calls, text messages, and social media platforms.

**Revenues and Costs:** The company generates its revenues from selling vegetables (69.42 percent), fruit seedlings (22.96 percent), herbs (4.5 percent), and trees (3.1 percent). The most important costs for the company’s operation are production, research and development, wages, sales and marketing, and logistics.

**Challenges:** Challenges include accessing quality seeds, the cost of these varieties, capital for propagation units, accessing loans as a young person, acquiring the needed expertise, marketing logistics.

**Contribution to Adaptation and Resilience:**

**Drought-resistant Seedlings:** The company propagates and sells drought-resistant seedlings to farmers, which helps them improve productivity even in periods of drought. The seed varieties are aligned with the regional climatic conditions to which they are distributed. The company currently has a holding capacity of 1.5 million seedlings every month and aims to increase this to 2.2 million seedlings by the end of 2022.

**Climate-smart Agriculture:** The company trains farmers in climate-smart practices and techniques, which increases their adaptive capacity in the face of climate change impacts such as rising temperatures and floods.

**Social Impact:** The company provides a social impact by creating jobs and livelihoods. Kimplanter currently employs 24 permanent employees and works with 21 casual workers, all of whom are youth. The company ensures that 60 percent of all workers are women. The company currently engages with 18,000 smallholder farmers annually and aims to increase this number to 72,000. These smallholder farmers can generate household income and create employment within their communities.

**The YouthADAPT Grant:** The grant has helped Kimplanter improve its documentation and marketing outreach, as well as better business management through business advisory services. The grant will help the business undertake research to develop new varieties of seedlings that are both drought-resistant and high in nutrition, with the aim to increase its product range from 15 to 25 products. The business will also offer after-sales service training support to the farmers who buy its products to ensure optimal production and to strengthen marketing of the new varieties. The grant will also help the company expand the Kimana branch of the business to allow it to reach more farmers.
BUSINESS CHALLENGES AND THE YOUTHADAPT INTERVENTION

Key Challenges Faced by the Winning Entrepreneurs in Launching and Growing Their Adaptation Businesses

Based on the interviews conducted, there emerged six main challenges that the young entrepreneurs faced while launching and growing their businesses.

Limited financial resources and difficulties in accessing and securing funding: Access to finance is essential to be able to fund adaptation innovations. This was a challenge, particularly for the more capital-intensive ventures that required costly technologies, machinery, or inputs. Young entrepreneurs had difficulty navigating loan systems that require collateral at levels that are unfeasible for them. Further, loan interest rates require constant payments over a year. This does not consider periods in which the company is not making revenues: for example, agribusinesses during production and pre-sale seasons.

Need for business development and operational skills: The second challenge commonly faced across the group was creating and establishing the business activities and protocols necessary for running a company and optimizing effectiveness and efficiency in its operations and service delivery. Winners expressed the need for in-house capacity building for business development skills such as project management, financial management, tracking daily activities, bookkeeping, budgeting, writing, implementing company policies and procedures, and marketing, to name a few.

Knowledge gaps: Several entrepreneurs expressed the need for climate experts trained on adaptation and resilience strategies, which would help them disseminate climate knowledge to their customers, smallholder farmers, local municipalities, and the wider community in which they operate. Hiring these experts is costly; thus this challenge is perpetuated by having limited financial resources.
**Uncertainty of climate impacts:** The winners have already experienced negative impacts of climate risks on their business, both directly and indirectly. Floods have caused disturbances in production and distribution processes through, for example, damage to infrastructure such as greenhouses and irrigation systems, as well as to roads, which affects access to farmers and markets. Heat stress decreases the number of working hours for farmers and results in crop losses. Rising temperatures also affects seedling storage and growth in greenhouses. With increasing variability of rainfall patterns and increasing frequency and unpredictability of extreme climate events, there is great uncertainty surrounding how climate risks will impact their businesses in the future. Potential impacts may disrupt operations, affect their supply chain, damage infrastructure and equipment, hinder service provision, and overwhelm their clients, thereby diminishing the effectiveness of their solutions. This is particularly true for young entrepreneurs in the agriculture sector, which in Africa is predominantly rain-dependent and highly vulnerable to climate impacts. This makes the implementation of adaptation strategies even more critical.

**Changing farming and customer behavior:** Being agents of behavioral change is challenging in itself. Some winners reported initial reluctance from the communities in which they operate in first accepting and then implementing new behaviors, such as adopting new technologies. Sustaining long-term behavioral change is another challenge requiring interventions and strategies that maintain motivation.

**Operational context:** Other contextual conditions that posed challenges for the winners to launch and grow their businesses include receiving little help from local municipalities, lack of infrastructure such as poorly constructed roads and unreliable access to electricity, difficulties obtaining the necessary certificates and licensing, government regulations such as on drone usage, and not having structured markets.

**How the YouthADAPT Challenge Has Helped the Winning Entrepreneurs Address Challenges**

The YouthADAPT challenge has helped the winners address some of the challenges they have faced since the inception of their enterprises. The grant, training sessions, and mentorship have all contributed to unlocking new possibilities for scaling up their businesses and impacting the lives of more people in their communities. The three main ways the YouthADAPT accelerator program has helped them are:

**Funding for scaling up:** The grant has enabled the entrepreneurs to grow their businesses through hiring more permanent and seasonal staff, purchasing the required machinery and technologies to increase their production capacity and service delivery, investing in research and development for developing new innovative adaptation solutions and expanding their product range, expanding their outreach for increased farmer engagement, building a greater network of clients and partners, and connecting to funding from other institutions for longer-term growth.

**Training for impact:** The training sessions combined with ongoing expert mentorship have provided the winners with concrete and customized business
development skills, including business management, strategic insights, marketing logistics, dealing with climate change impacts, financial management and tracking of finance flows, cash flows, monitoring of expenditures, and budget creation. Further, these training sessions allow the entrepreneurs to share knowledge, learn from one another, and build their networks.

**Investor readiness:** The winners generally perceive improved levels of investor readiness resulting from the accelerator program. Winners report that the training and mentorship has enabled them to improve their business documentation, increase the commercial viability of their enterprises, and better position themselves during the application and pitching process, thus making them more attractive to investors and partners. Ultimately, this means the entrepreneurs are better equipped to take advantage of emerging market and investment opportunities. Winning the challenge has also helped to establish their business reputation and gain competitive advantage among other businesses in their respective sectors.

**RECOMMENDATIONS ON HOW GOVERNMENTS IN AFRICA CAN SUPPORT THESE YOUNG ENTREPRENEURS**

Reflecting on the challenges and barriers they have faced in launching and growing their businesses, the winners provided their insights into how African governments can support young entrepreneurs through policy actions and programs. Elements of an enabling environment for young entrepreneurs included improved infrastructure and connectivity (such as energy access and transportation routes), inclusive policies, access to funding and knowledge programs, easing lengthy bureaucratic processes, encouraging business through tax incentives, and more. Crucially, youth should have a seat at the table during policy formation. The three main recommendations were:

**Access to funding:** Make access to financial capital easier for young entrepreneurs. This includes simplified loan systems and processes; making grant and funding opportunities more visible; lowered interest rates that are flexible and adjusted according to revenue at different periods; and more flexible and feasible collateral requirements.

**Create tax incentives:** Encourage youth entrepreneurship by lowering tax barriers that severely inhibit growth. This could include providing early-stage tax cuts until the company starts making a profit; offering adaptation tax rebates; reduced or zero-rate taxes on farm inputs such as seeds and equipment; and tax holidays or exemptions.

**Facilitate access to knowledge and capacity building:** Equip young people with tools to successfully implement their adaptation innovations through training and mentorship programs; business incubators; training in digital technologies; access to networks of young entrepreneurs around the world; knowledge exchange between young businesses and established companies; vocational training programs; and climate change awareness-raising campaigns. Create synergies between government, NGOs, and the private sector.