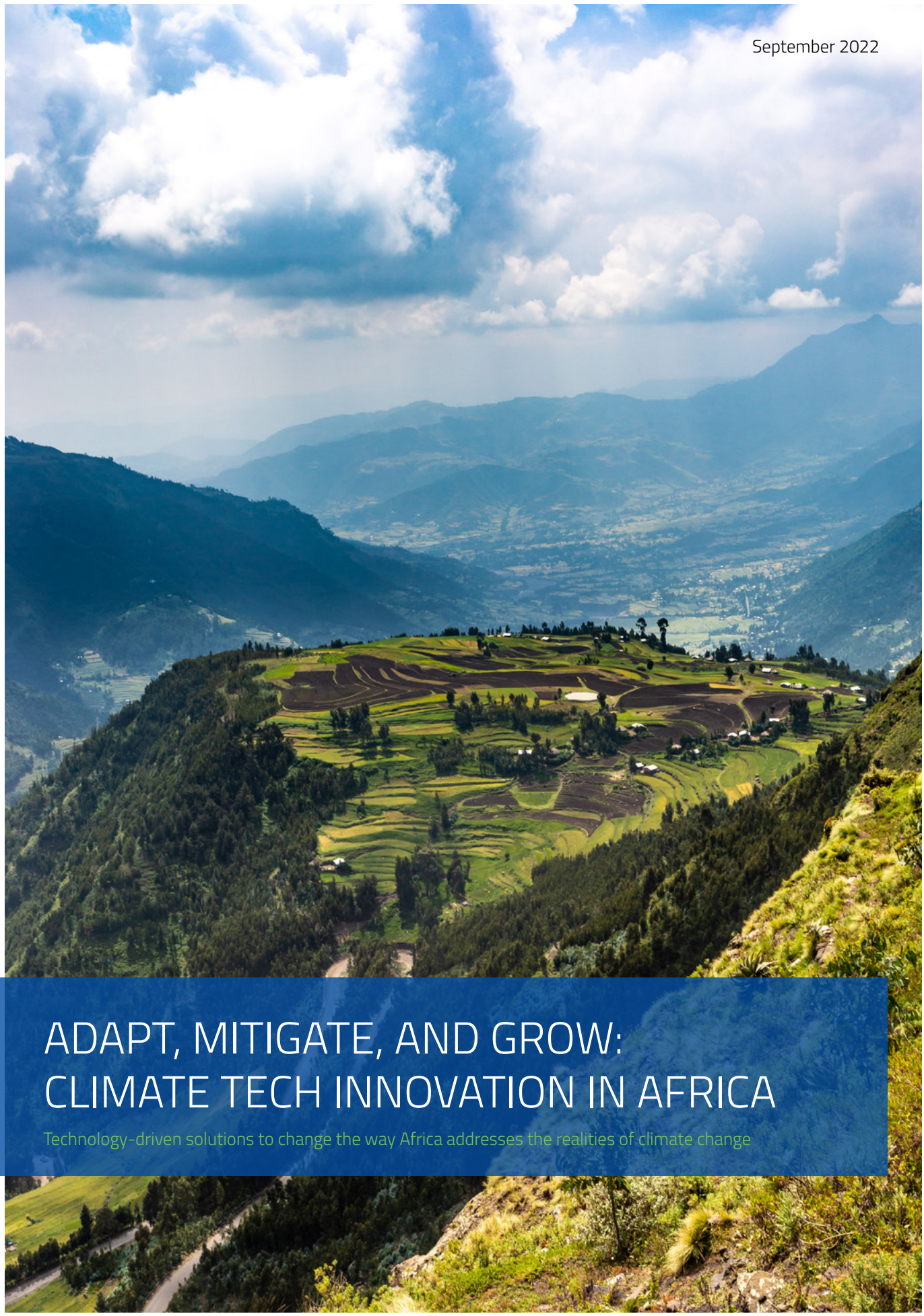
September 2022



ADAPT, MITIGATE, AND GROW: CLIMATE TECH INNOVATION IN AFRICA

Technology-driven solutions to change the way Africa addresses the realities of climate change

eit Climate-KIC
Co-funded by the European Union

BMZ Federal Ministry for Economic Cooperation and Development

giz

BRITER BRIDGES

AUTHORS

EIT Climate-KIC is a Knowledge and Innovation Community (KIC), working to accelerate the transition to a zero-carbon, climate-resilient society. Supported by the European Institute of Innovation and Technology, EIT Climate-KIC identifies and supports innovation that helps society mitigate and adapt to climate change believing that a decarbonised, sustainable economy is not only necessary to prevent catastrophic climate change, but presents a wealth of opportunities for business and society.

Through its Foundation, Stichting Climate-KIC International Foundation, it has entered into an agreement with GIZ exclusively on behalf of and for the account of the Federal Ministry for Economic Cooperation and Development ('BMZ') to accelerate climate tech solutions for a net-zero Africa. This project significantly strengthens the climate-focused innovation ecosystems of African countries by providing necessary support to early-stage businesses with ideas and potential to contribute to decarbonised development. The Foundation leverages its vast experience to set out a comprehensive and integrated strategy to identify and support African early-stage businesses with their climate tech solutions.

Briter Bridges is a fast-growing market intelligence and research firm focused on emerging economies. Briter has built the largest collection of visual publications on Africa and underserved markets and regularly provides data and insights to corporates, development finance institutions, governments, and investors. Briter's proprietary business data platform, Intelligence, is regularly used by thousands of public and private organisations ranging from the World Bank to Amazon and governments.

Deutsche Gesellschaft für Internationale Zusammenarbeit ('GIZ'). GIZ is Germany's leading provider of international cooperation services. As a federal enterprise, it supports the German Government in achieving its objectives in the field of international cooperation for sustainable development. GIZ is fully owned by the Federal Republic of Germany, represented as the shareholder by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry of Finance (BMF). GIZ has more than 23,600 staff around the globe and operates in about 120 countries worldwide and has over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security.

WITH INSIGHTS FROM...

Ambo Ventures is a climate-tech focused venture capital firm based in Morocco and Kenya, helping Africa's leading entrepreneurs tackle the climate crisis.

The Carbon Trust is a mission-driven climate consultancy providing expert guidance to businesses, governments, and organisations on their route to net zero emissions.

GreenMax Capital Advisors is a leading fund manager, transaction advisor and consulting partner delivering innovative financing solutions for sustainable energy in emerging markets.

GrowthAfrica is a leading business accelerator in Africa with a presence in 6 countries and supporting businesses in 18 African countries

Ignitia is a weather forecasting company focused on the tropics, helping organisations and smallholder farmers make informed and data-driven decisions.

Impact Hub Kigali is an innovation hub that supports bottom-up innovation through offering events, co-working, event space, consultancy, and innovation programmes. Impact Hub Kigali is part of a global network of hubs across the world.

Katapult is an early-stage venture capital firm and accelerator supporting impact-driven start-ups that are solving global challenges. In 2022, Katapult launched its first dedicated funds and programmes in Africa, targeting agri/food/climate tech start-ups.

Komaza is a distributed forestry company that partners with smallholder farmers in Kenya to plant trees for sale as sustainable wood products.

OOLU Solar is an off-grid solar company that distributes solar and pay-as-you-go (PAYG) solutions to six countries across West Africa.

Persistent Energy is a climate venture builder that provides early-stage companies with financial and human capital and support businesses that will succeed commercially and drive lasting impact.

Sunculture leverages off-grid solar technology that is solving everyday challenges by providing smallholder farmers with access to irrigation, solar charging, and lighting.

Tamuwa is a producer of renewable biomass briquettes and pellets from sugarcane bagasse, an alternative to unsustainably harvested fuelwood.

Youthinkgreen (YTG) is a non-profit social enterprise based in Germany that is empowering and educating youth on ecology- and sustainability-focused problems. Since 2013, YTG has been an active presence in Egypt, offering programmes and projects to catalyse youth-developed innovations.

Yo-Waste is a tech-enabled waste management start-up that offers a location-based mobile app to collect household waste, commercial waste, and recycling through a network of partner local waste collectors.

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INTRODUCTION

In August 2021, the United Nations Intergovernmental Panel on Climate Change (IPCC) released a report on the state of the world's climate, highlighting the need for urgent action. Climate change and rising temperatures have been increasingly linked to incidents of natural disasters, droughts, and heatwaves, events which are occurring with increased frequency and resulting in global challenges such as biodiversity loss, water scarcity, and food insecurity.

In an effort to limit global temperature increases to 1.5 degrees, scientists at the IPCC are recommending changes to existing energy systems, lifestyles, and investment decisions, as well as promoting disruptive innovations that can help societies mitigate, adapt and strengthen their resilience to the risks associated with climate change. For example, innovations in renewable sources of energy, such as solar power or biofuels, are demonstrating their potential to serve social, economic, and environmental goals.

Africa's share of global emissions has been relatively limited to date, comprising 2 per cent of the world's total. Yet it is one of the regions most negatively affected by climate change through the increased prevalence of extreme weather events and direct consequences related to food security and livelihoods. As a result, there is a growing consensus to support countries across the region to reduce the reliance on high-pollution industries associated with economic development and instead adopt renewable sources and promote an energy transition in line with goals for low-carbon growth.

Climate technologies are increasingly being seen as a way to support this transition. 'Climate tech' and 'cleantech' indicate technology-driven solutions that contribute to the reduction of emissions or address the negative effects of climate change on people and the planet. They refer to energy-generating innovations and are inclusive of solutions related to the circular economy, such as waste management, recycling, and smart living, as well as products cutting across different industries. Undoubtedly, one of the fastest-growing areas of climate tech is renewable and solar-powered electrification, targeting approximately half of the population in sub-Saharan Africa that still lacks access to electricity. Another prominent area of innovation is agricultural solutions, where digital and technology-driven ventures are helping digitalise food value chains, improve productivity, strengthen sustainable practices, decrease post-harvest losses, and increase food security across the continent.

Targeting these industries holds vast socio-economic and environmental potential for Africa for three key reasons:

1. The competitive advantage countries across the continent have in terms of natural resources and potential for renewables. Africa boasts significant solar, wind, hydro, and geothermal energy sources that could make it a leader of renewable energies in the future. The International Renewable Energy Agency (IRENA) estimates that renewable energy capacity in Africa could reach 310 GW by 2030.

2. The projected growth of the private sector and contributions to the economy. The agriculture and energy sectors have historically underperformed in Africa despite employing the vast majority of people on the continent. Disruptive innovations hold great promise not only to transition to a low carbon future, but also to improve the productivity and contribution of these sectors to the economy.

3. The large addressable market to tap into. Meeting the energy and food needs of the continent has remained a challenge, but also presents an opportunity to innovators and investors. For example, more than three quarters of the population does not currently have access to electricity.

'**Adapt, mitigate, and grow: an analysis of climate tech innovation in Africa**' offers insights into the synergies between key stakeholders, the state of the market, and the growth of the climate tech industry in Africa. The data explored leverages secondary desk research and data from Briter Bridges' market intelligence platform, with additional qualitative insights informed by interviews with key stakeholders in the space, including ecosystem support organisations, investors, and start-ups.

KEY FINDINGS

1. Stakeholders

a. In simplified terms, there are four key stakeholders that are central to the development of the climate tech landscape, including the private sector, the support landscape, governments, and the consumers. These groups need to align on needs and priorities for the ecosystem to flourish.

2. State of the industry

a. There is growing investment into climate tech in Africa, with renewable innovations, particularly in the realm of solar energy, leading the race. Solutions that reduce inefficiencies in the use of natural resources and agriculture are also on the rise, with precision agriculture and data analytics companies attracting significant funding. Waste management and sanitation companies are slowly gaining traction, addressing a substantial market in need of disruption.
b. There exist only a limited number of solutions at the growth-stage that capture the bulk of funding volumes in terms of deal size with the majority of deals at the early stage rounds.

3. Obstacles and limitations

a. Some solutions are highly technical, costly, or hardware-intensive to develop, representing a barrier to entry for early-stage start-ups.
b. Even though the addressable market for many climate tech solutions is large, reaching the point of growth and scale remains a challenge due to high costs and complex operations.
c. Although the number of impact-focused and early-stage investors is increasing, there is a notable gap in the availability of capital and support for climate tech start-ups.
d. For climate tech to be effective and create resilient communities, more solutions should be localised, meaning that they are adapted to the local context. One way to ensure this is by fostering locally-grown solutions, which can also positively spill over into the wider economy.
e. In order to monitor and evaluate the impact of climate tech, there is a need for more standardised, robust, and consistent approaches to long-term measurement and data collection of key indicators.
f. While progress is being made, there are still a number of regulatory hurdles for climate tech solutions, limiting growth and expansion.
g. Time is against us. We need to be better at identifying and scaling solutions which are compatible with a 1.5 degree reality.

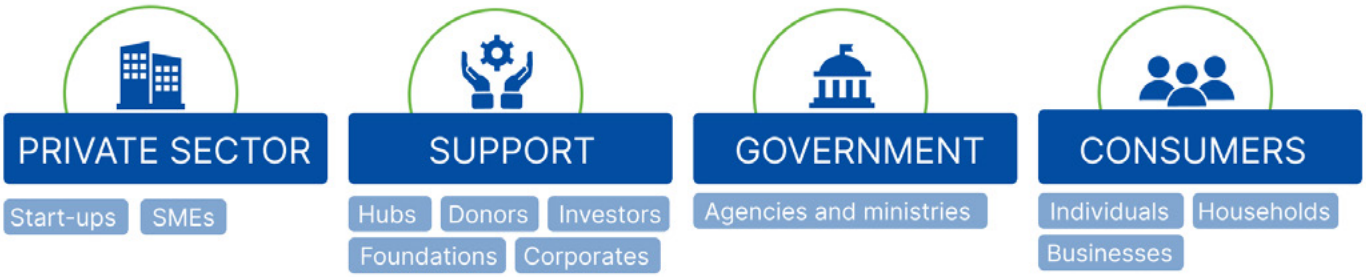
4. The road ahead

a. Blended finance and patient capital are beneficial funding instruments in the realm of costly hardware and capital-intensive solutions.
b. Greater convergence between global, national, and private agendas are putting SDG-focused objectives in the spotlight. International agreements and events are helping create momentum and direct investments into the climate tech industry.
c. Partnerships and synergies between stakeholders are conducive to creating more cohesive ecosystems by aligning missions, leveraging strengths, and developing a stronger environment for climate-tech solutions to succeed.

STAKEHOLDERS

The climate tech industry is one of the fastest-growing in Africa. Not only has the number and range of solutions increased, but the type and availability of investment have expanded significantly. One of the key drivers has been of the rise of dedicated funds that stem from global private and public agendas aiming to meet the Sustainable Development Goals (SDGs) by 2030.

In order for the climate tech ecosystem to evolve, there are several crucial synergies that happen between country-level, regional and global stakeholders. The relations, interactions, and partnerships that occur between these different types of players are shaping the development of current and future approaches to the industry. This report breaks down these stakeholders into four key categories:



START-UPS & THE PRIVATE SECTOR

State of the market

Briter Intelligence counts more than five hundred start-ups operating across Africa in the climate tech space, operating across thirty five areas or products. The mapping below illustrates some of the top-funded climate tech companies across the region. Beyond start-ups and including larger corporate organisations, the private sector is contributing to a significant share of commercial energy generation and infrastructure development in Africa.

Geographical distribution of climate tech

The largest concentration of climate tech start-ups in Africa can be found in Kenya, Nigeria, Uganda, and South Africa. Kenya, South Africa, and Egypt are often recognised as the continent's leaders in the climate tech space, largely due to the vast natural resources available and the maturing and conducive environment for start-ups to incorporate and attract local and international funding. Although the scale of climate tech differs from country to country and geographical disparities remain, the industry holds immense growth and impact potential across the region. Several other markets across the continent now have growing climate tech ecosystems, such as Ghana, Uganda, and Rwanda, leveraging the local context and resources to build innovative models.

* Note that climate tech solutions can be linked to each of the SDGs, and the visual presentation only represents those most directly affiliated with climate tech solutions.

CLIMATE TECH

INNOVATORS IN AFRICA

RENEWABLE ENERGY
SOLAR · WIND · BIOFUELS · HYDROPOWER · COLD CHAIN

CLEAN ALTERNATIVES
BATTERIES · GAS & COOKING EQUIPMENT · ELECTRICITY · UTILITIES · SMART METERING SYSTEM · SOLAR IRRIGATION · BIOGAS

AGRICULTURE & AGTECH
FERTILISERS & INPUTS · ALTERNATIVE PROTEIN · PRECISION AGRICULTURE · WEATHER FORECAST · FORESTRY · DATA ANALYTICS · FARM MANAGEMENT · COLD STORAGE · AQUACULTURE · HYDROPONICS

SMART LIVING
ELECTRIC VEHICLES · SENSORS

WASTE MANAGEMENT
RECYCLING · RECYCLED PRODUCTS · E-WASTE · ORGANIC WASTE · HOUSEHOLD WASTE · FECAL SLUDGE MANAGEMENT · WASTE TO ENERGY

WATER & SANITATION
WASH · WATER ACCESS

CAMEROON · COTE D'IVOIRE · TUNISIA · EGYPT · MOROCCO · SIERRA LEONE · SENEGAL · MAURITANIA · CHAD · KENYA · BENIN · MALI · NIGERIA · TANZANIA · RWANDA · DRC · GHANA · NIGER · UGANDA · ZIMBABWE · MALAWI · SOUTH AFRICA · MADAGASCAR · ZAMBIA · MOZAMBIQUE · MAURITIUS

*Cold chain in this case represents cold chain solutions powered by solar grids, therefore falling under renewable energy.

**This mapping explores funded companies across the different climate products, but does not claim to be 100% comprehensive of start-ups in the ecosystem.

***Companies are organised by their HQs (if in Africa) or by their main African office in the cases of companies incorporated outside Africa

Fast-growing sectors and products

Given the focus on a low-carbon transition, most climate tech solutions identified are in the renewable energy space. Other sectors, such as sustainable agriculture and agritech, waste management and circular economy products, electric mobility, and smart living, are relevant as the innovative solutions offered in these sectors also directly or indirectly contribute to mitigating or adapting to climate change.

Solar energy-based products have seen the strongest growth. In particular, aside from solar panel developers and distributors, solar home systems, solar-powered irrigation, or solar kiosks. Waste and recycling facilities, from collection to disposal, upcycling, and waste-to-energy products, have also seen an increase in uptake, especially due to the lack of centralised and organised mechanisms for waste disposal across the region. The climate tech industry is also seeing systematic innovations and integration across sectors and products. For example, Abdelrahman Fahmy, Chairman and Executive Director at YTG, says "*we are noticing that agricultural products, water access solutions, and energy providers are often overlapping*", as is the case for solutions such as solar-powered irrigation or crop insurance for farmers. Sunculture, for instance, is making farmers more climate-resilient by helping them adapt to changing weather patterns by providing a solution that combines solar water pumping technology with drip irrigation. New business models also are reclaiming responsibility for having revived the public interest in agriculture. Fahmy notes, "*startups these days (as opposed to the last decade) can actually tap into investors that have an interest across all these sectors*." Katapult, for instance, is focused on delivering tangible impact at a systems level, investing in and accelerating entrepreneurial and technological solutions that solve problems across several key areas at the nexus of food, agriculture and climate value chains. These include food production solutions to improve yields and regenerative agricultural practices,

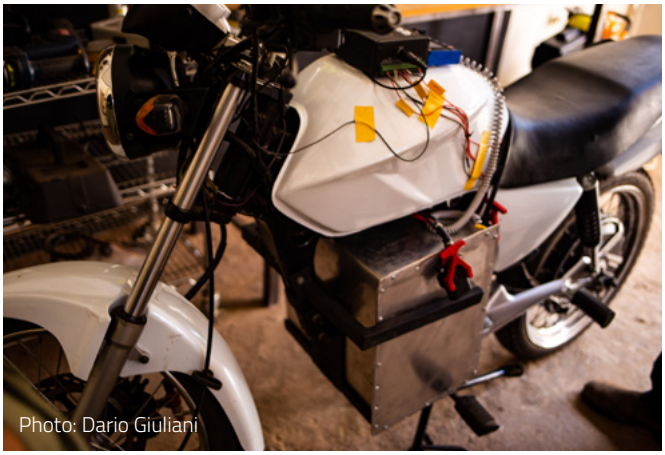


Photo: Dario Giuliani

Photo: Tamuwa

Photo: Sunculture

logistics, inclusive finance, marketplaces and data and information to transform value chains, and sustainable infrastructure including renewable energy solutions and improved processing and recycling technologies. The following below highlights some of the key sectors and products considered under the umbrella of climate tech in this report.

The products included in agriculture are limited to products and solutions that relate directly to sustainable farming, such as solar powered irrigation.

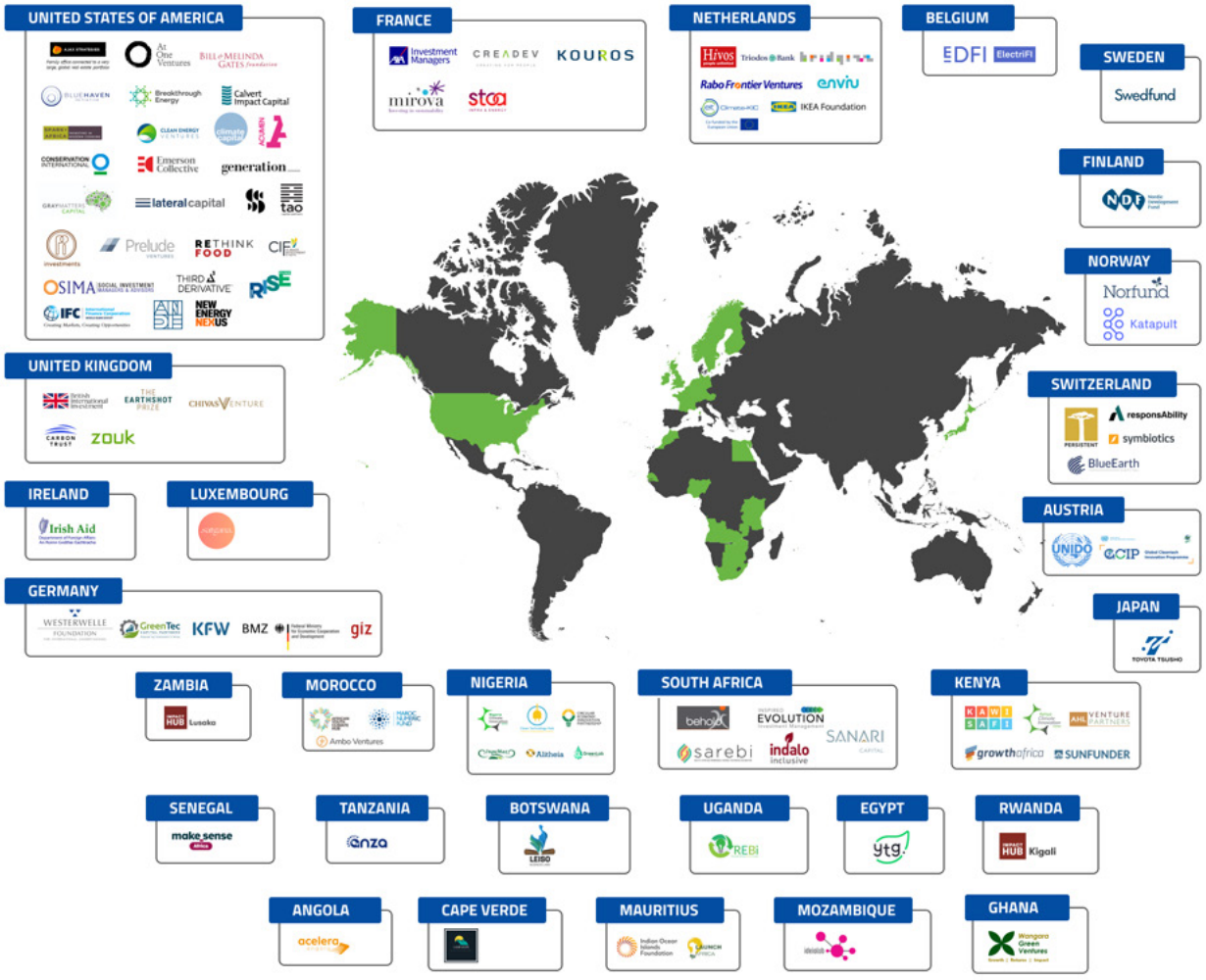
SECTOR	DESCRIPTION	PRODUCTS	EXAMPLES
RENEWABLES	Solutions that combine the use of technology and digital tools with sources of renewable energy.	Solar home systems; Solar kiosks; Biofuels; Wind energy; Hydropower	PEG; Bboxx; rensource; OOLU
CLEAN ALT.	Sustainable and clean alternatives to non-renewable energy sources and products.	Gas & cooking; Batteries; LPG; Smart metering system; Electricity; Solar irrigation	ACACIA INNOVATIONS; BioLite; KOKO
AGRICULTURE	Digital tools and technology that help farmers and businesses create more productive and efficient food value chains.	Fertilisers and inputs; Alternative protein; Precision agri & data; Farm mgt.; Forestry; Cold storage; Aquaculture; Aquaculture; Hydroponics	KOMAZA; Aerobotics; SunCulture
WASTE MGT.	Platforms and providers that deal with the collection and disposal of waste and pollution.	Recycled products; Recycling; E-waste; Household waste; Hydropower; FSM; Organic waste; Waste to energy	YO WASTE; MR. GREEN AFRICA; coliba AFRICA
SMART LIVING	Solutions that facilitate more sustainable cities and lifestyles through energy and resource management and tech-driven decision making	Electric vehicles; Sensors; IoT	lightware
WATER & SAN.	Ventures tackling the lack of clean and safe water and sanitation services.	WASH; Waste Water; Water Access	Sanivation; WATERPOD

THE SUPPORT LANDSCAPE

Similar to other sectors, the climate tech industry benefits from the existence of a dedicated support ecosystem that works to facilitate the development of an enabling environment for innovative technologies and solutions through funding, training, networks, partnerships, mentorship, community, and technical assistance. Although, as mentioned, this report does not account for the vast proportion of resources entering the sector via government partnerships, decarbonisation agendas put forward by energy corporates, as well as multilateral donor-led infrastructural projects, over the past few years, these ecosystems have benefited from the allocation of more significant funding to select vehicles such as funds and accelerators. The map below presents some of the key investors and organisations actively supporting climate tech innovators in Africa.

CLIMATE TECH

KEY SUPPORT ORGANISATIONS



*The stakeholders have been presented by their headquarters, but several are active across multiple countries in Africa.

Some of the key stakeholders within the support landscape include:

Tech hubs and ecosystem support organisations

Tech hubs in Africa provide training and support to early-stage start-ups, and act as an entry point for entrepreneurs developing their ideas and business models. There are several different types of tech hubs and related initiatives, including incubators, accelerators, innovation hubs, technology centres, makerspaces, and hackathons.

Most hub programmes are sector-agnostic, offering training and capital to cohorts for periods that range on average from 3 to 12 months. Others offer competitions, providing the most innovative solutions with grant funding or other awards and prizes. Not only does this type of support help companies get off the ground, but participation in a hub programme can also provide credibility to start-ups. Seed funding is often difficult to access for climate tech solutions as they are often considered high-risk for investors. The need for more ecosystem support organisations being able to deploy capital in addition to technical assistance and mentorship is key to de-risk companies from the early-stages and help overcome this perception barrier for later investors.

On the other end of the spectrum are organisations such as Impact Hub, which tend to focus on designing programmes for entrepreneurs, often in partnership with local and international partners to deliver agnostic and sector-specific interventions, such as the ClimateLaunchpad. In fact, several of the leading incubation and acceleration programmes across the continent are being co-led by several stakeholders to optimise resources and strengthen support. Some notable examples include the East Africa Accelerator (IKEA Foundation and Acumen), the MEST Express Accelerator (MEST and Mastercard), Katapult Africa Accelerator Programme (Katapult, Tony Blair Institute (TBI) for Global Change, Norrsken, and Smart Africa), and Africa ClimAccelerator (with 35 preparation and implementation partners). Although hub programmes act as an entry point for early-stage entrepreneurs to access support, Cares Manzi, Managing Director at Impact Hub Kigali, explains that there are currently very few acceleration and incubation programmes that offer targeted support and technical expertise to climate tech start-ups. Whereas some of the content provided by the support programmes can be generalised across sectors and industries, such as the fundamentals of a business plan or ways to structure fundraising efforts, there are elements specific to entering the climate tech space that require more technical assistance or support. GreenMax Capital Advisors, for instance, offers technical support around bankability and investment readiness by curating toolkits for companies to access institutional capital. The ClimAccelerator facilitates access to markets and capital, and helps early-stage climate ventures develop their business model and structure the organisation. The programme is underpinned by a mission to build a community of climate tech ventures across the continent. By creating a network of entrepreneurs, the programme is set up to cultivate greater collaboration, partnerships, and expansion opportunities within and between countries.

ClimateLaunchpad

ClimateLaunchpad is considered the world's largest green business ideas competition. It aims to identify the best ones and support them on the journey towards commercial viability. To this end, the ClimateLaunchpad competition provides early-stage climate entrepreneurs with intensive business and climate training to create scalable, investable enterprises. Since launching in 2014, the competition has helped create over 2,000 start-ups providing a range of services targeted at tackling different climate challenges. These start-ups have created over 8,000 high-value jobs for local communities, raised over EUR 100 million in capital, and generated more than EUR 50 million in revenues. At the core of the ClimateLaunchpad initiative is a pool of partners that collaborate with EIT Climate-KIC at TU Delft to deliver high-quality outreach, educational content, and acceleration services to 'climate entrepreneurs'. The network of partners includes a wide range of global, regional and national organisations such as universities, incubators, accelerators and non-profit organisations in 50+ countries.

ClimAccelerator

ClimAccelerator is a global programme giving start-ups access to innovate, catalyse, and scale the potential of their climate solutions. In a global community of organisers, EIT Climate-KIC runs both theme-based and place-based acceleration programmes. It goes beyond European borders, building a bridge between our world's industry experts and systems to break new ground in carbon reduction.
With the European Green Deal and Paris Agreement as north stars, breakthrough businesses with proven climate impact technologies and partners need one powerful platform where they can connect and scale towards true industry transformation. It's time to unleash the innovation potential of start-ups to shape a climate-positive new normal.

Currently, the ClimAccelerator is implemented in more than 40 locations across the world attracting between 2,000 to 3,000 applicants and supporting over 300 with intensive entrepreneurship training each year.

Investors

Finding the right type of investments and investors is key to deepening the climate tech sector. In addition to financing, investors support startups by bringing credibility to their ideas, developing business strategies, connecting entrepreneurs to key networks, helping to scale solutions, and creating measuring and reporting mechanisms. Some of the leading investors in climate tech in Africa include Energy Access Ventures, Persistent Energy, Crossboundary, Africa Infrastructure Investment Managers (AIIM), Shell Foundation, Ambo Ventures, Acumen, and Global Innovation Fund. The dynamics of venture capital funding and private equity are not always suitable for the growth journeys of climate tech start-ups, which often require patient capital and investors with a focus beyond profits. A notable characteristic of many of the investors that are active in the climate tech space is having an impact- or environment-focused mandate. These mandates span a range of investor types ranging from hubs to venture capitalists (VC), DFIs, corporate venture arms, and private foundations. Where these investors deploy capital is often associated with the scalability and growth stage of the company, with angels, hubs, and micro-VCs more geared towards early-stage start-ups, and VCs and DFIs more aligned to growth-stage companies. The type of funding ranges from grants to blended finance, patient capital, equity, and debt. In efforts to move toward a more sustainable and inclusive future, with

several investors favouring ventures that create beneficial change in addition to yielding financial gains by considering 'Environmental, Social, and Corporate Governance' (ESG) criteria as a way of measuring outcomes. While ESG has been criticised in recent years, it does represent a broader shift amongst businesses to focus on a triple-bottom-line covering the economic health, environmental resilience, and social impact of their business. A study by the Global Impact Investing Network that surveyed 294 leading impact investors globally indicated that the impact investing market stood at $715 billion in 2020, a proportion of which was deployed through catalytic capital. These funds are crucial to covering an estimated $5-7 trillion USD market gap needed to reach the SDGs.

GOVERNMENTS

The government in any given country is largely responsible for many of the public services that are directly related to the services provided by climate tech solutions, for introducing and deciding on policies and regulations surrounding the industry, and for participating and engaging in global agreements on climate mitigation and adaptation efforts.

Government responsibilities

In most countries, services that require large-scale infrastructure, such as energy, water or general waste management, are provided by the government. Across Africa, however, services remain severely limited to urban areas, and in many cases, are not reliable nor accessible to large segments of the population due to restricted capacity. Beyond public service provision and in their own efforts to reach the SDGs, governments across the continent are implementing policies to reduce pollution and waste. For instance, 34 out of 54 countries have banned single-use plastic, and several are using big data and sensors to track and monitor traffic pollution. However, there is a long way to go for countries across Africa to viably become carbon-neutral or net zero. Many governments lack the resources needed to make this transition on their own, indicating a need for more innovative partnerships between governments and the private sector.

Public-private partnerships and support

Local governments play an instrumental role in promoting, supporting, and creating acceptance for climate tech solutions. Vincenzo Capogna, CTO at Oolu Solar, suggests that governments across Africa are increasingly recognising the contribution of the private sector and innovators to fill the gaps and provide energy access solutions that can strengthen resilience against climate change. As an example, Martin Tumusiime, Co-Founder and CEO at Yo-Waste, explains that the government in Uganda has the mandate to subcontract different providers to deliver waste management services for designated areas. Governments might also engage in large-scale projects in partnership with the private sector to decentralise public services and reach wider audiences, such as informal settlements or rural areas that are disconnected from a central grid or facilities.

Aside from partnerships, the direct involvement and engagement of the government differ from country to country, but in instances where the government counts metrics related to off-grid integration as contributing towards official targets, they can support the development of climate tech solutions using different measures, ranging from direct investments to import duty and VAT exemptions, or subsidies. Christopher Aidun, Co-Founder and Managing Partner at Persistent Energy explains that although several climate-tech solutions are impact-driven and are covering market gaps for the bottom of the pyramid, it is often not commercially viable for a company to target the lowest-income customers. To align with national and international objectives, local governments, NGOs and development institutions should provide subsidies and benefits

to support distribution of off grid solar products. Mikayla Czajkowski, Chief of Staff at Sunculture, further explains that results-based financing, subsidy schemes, VAT and duty exemptions, and the use of carbon credits are all part of a strategy to contribute to a price reduction of products and increase affordability for end-users. A stamp of approval from official agencies will also go a long way in creating acceptance for climate tech products.

CONSUMERS

For climate tech solutions to ultimately be effective, there needs to be a sizable-enough market of potential consumers. Consumers in this context refer to individuals, households, and businesses, which tend to benefit from climate tech products in different ways.

Individuals and businesses

For consumers, there is essentially a dual perspective of needs to be considered. On the one hand, the goal of climate tech is to make everyday life sustainable by reducing the negative impact on the environment, ensuring a better future for current and future generations. On the other hand, consumers have other, often more immediate priorities, such as the affordability and accessibility of a product or service to improve their standard of living. The African context consists of challenges that are unique to the continent, and the solutions being developed need to balance addressing these dual priorities while accommodating the realities of the local market. Climate tech can help to integrate these priorities under the same overarching goal and reframe them as mutually reinforcing rather than opposing. For example, addressing the lack of access to electricity to increase the standard of living while using renewable energy, reducing the reliance on harmful cooking fuels by substituting them with more bio-friendly alternatives, or ensuring cold storage and distribution of food products to secure farmers' livelihoods while also reducing food waste and creating more sustainable food value chains.

Poor understanding of the behaviour patterns and actual needs of low income consumers can be one of the biggest barriers to scaling. User willingness and trust in the solutions are therefore critical. Vincenzo from OOLU suggests that solar energy solutions used to be perceived by consumers as a fall-back option when the main grid fails due to historically well-intentioned but poorly executed (and maintained) projects that have left behind a cemetery of solar systems in many rural areas. This perception has now shifted, and by demonstrating, distributing, financing, and maintaining reliable and durable solar products, consumers increasingly consider solar to be a reliable and desirable technology. Businesses are also important consumers of climate tech, where a similar argument applies. Businesses need to be shown that there are alternatives to traditional forms of energy, such as diesel generators or fossil fuels, and that these alternatives can be just as efficient and competitively priced. Climate tech should also support businesses in adapting processes, creating transparent supply chains, and becoming compliant with local and global regulations and policies in the net-zero mission and ESG-related practices.

Adapting disruptive solutions to different user groups in terms of skills and literacy level is also important for accessibility. As an example, weather forecasting company Ignitia has different modes of access adjusted to the user. In the case of smallholder farmers, particularly those without formal education, forecasts may be best delivered through an SMS and a simple description, whereas agribusinesses or organisations may benefit more from a web or mobile app, or an API that feeds data directly into their solution. For more climate tech solutions to become more widespread, they should accommodate the user or ensure that proper training is offered to increase uptake.

Targeting youth

Many countries across Africa have a large segment of youth in the population, with approximately 70% of the population across the continent being under the age of 30. Fahmy, from YTG explains that efforts of promoting sustainability should naturally target youth and the new generation to increase early awareness of environmental concerns. In addition, climate-focused innovation is quickly becoming a desirable industry to work in, representing a fundamental shift from the non-renewable energy space, underpinned by unproductive practices that are accelerating the negative effects of climate change. The so-called green transition, representing a shift from traditional to renewable industries, is estimated to create 24 million jobs by 2030, driving the interest in climate tech and climate entrepreneurship alongside it.

Photo: Sunculture

GROWTH OF AN INDUSTRY

167 climate tech companies raised funding 2015-Q1 2022

14.7% of total funding to digital & tech startups

$2.1 billion raised by climate tech in the period analysed

$440 million raised by climate tech in 2021

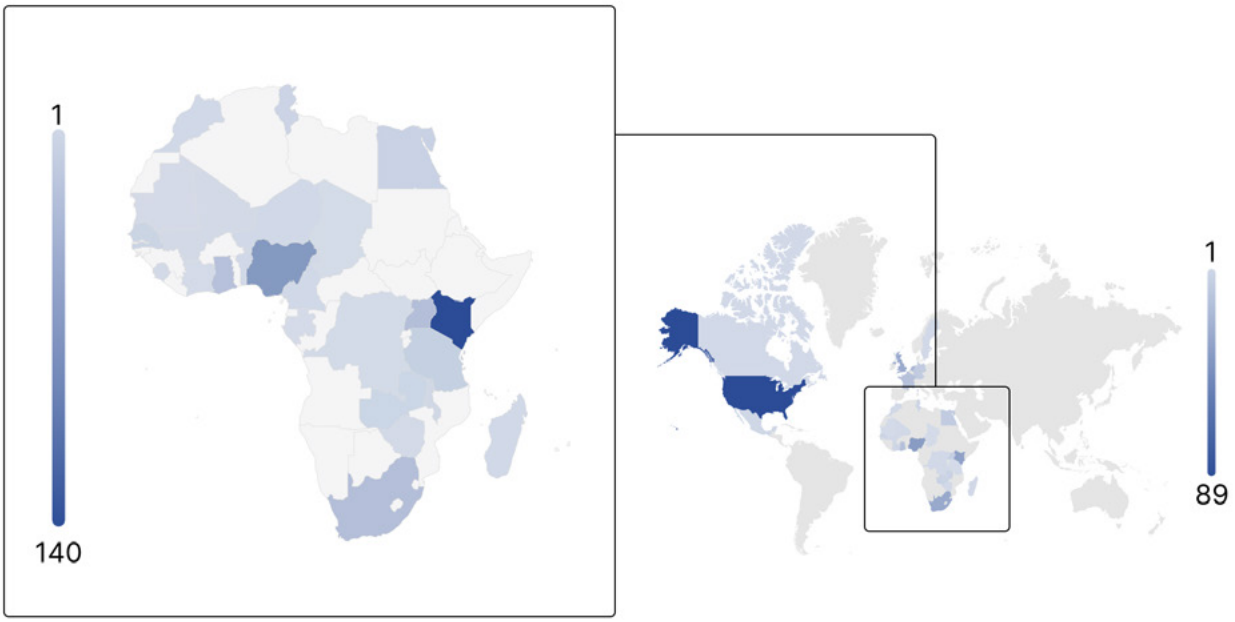
THE INVESTMENT LANDSCAPE

The climate tech industry in Africa is rapidly growing, creating more start-ups, and attracting more and more investment. Between 2014 and Q1 2022, climate start-ups in Africa cumulatively raised just over $2,1 billion in disclosed funding, accounting for 14,7 per cent of the total investments raised by digital and technology-driven startups in the same period. In 2021 alone, recorded funding into climate tech companies reached at least $440 million, demonstrating the growth of climate-focused start-ups and the increased number of active investors. Some of the top funded companies active across the climate-inclusive sectors in the region include M-KOPA, Zola, d.light, Gro Intelligence, Daystar Power, Komaza, Aerobotics, and Sparkmeter.

Geographical breakdown

Funding allocated to climate tech is on the rise globally, with bigger ticket sizes available and signs of a maturing market becoming evident in more recent years. According to estimates from PWC (2021), sub-Saharan Africa captures just 0.2 per cent total venture capital flows. Analysing the funding landscape by looking at the companies Africa-based locations offers insight into the

Figure: Geographical funding distribution by deal numbers



Not all investments are made public and tracking private companies' financials is subject to respecting confidentiality. Disclosed funding refers to investments that have been announced publicly and whose value is revealed. The deals are categorised by the African headquarter of the companies to avoid overrepresentation over companies registered or incorporated outside the continent. The deals have been organised. by their primary sector and product.

markets these funds are flowing to. It shows that Kenyan companies raised the biggest share of the funding, capturing $1,2 billion across 140 deals, which accounts for 56 per cent of the total disclosed funding. Nigeria follows with 23 per cent of the funding, with almost $450 million in funding across 65 deals. This distribution reflects the broader investment trends in the region, with Kenya, Nigeria, South Africa, and Egypt dominating the funding landscape. According to a study conducted by the Climate Policy Initiative (2022), this can in part be explained by a growing focus on renewable energy sources in the selected countries, where population size, GDP, and technical capacity to implement projects have played a role in the climate financing committed by national and external sources. Innovators in Ghana, Rwanda, Uganda, and Senegal are also attracting a growing number of deals in the climate-tech space, partially driven by a favourable business environment, active policies promoting climate and ICT, as well as budding startup ecosystems. It may be important to note that several companies active across the continent are registered overseas for reasons such as easier and more frictionless access to finance. Companies incorporated outside Africa raised 69% of the funding across 48 per cent of the deals with companies registered in the United States leading the way with $796 million raised across 89 deals.

Figure: Kenya/HQ - number of deals

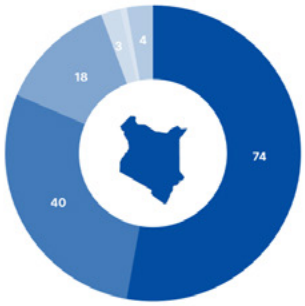


Figure: Kenya/HQ - sum ($) of deals

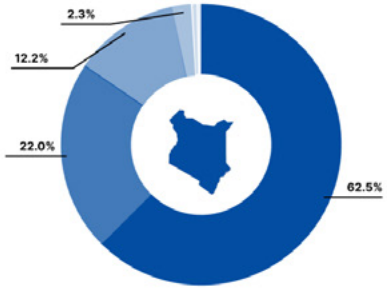


Figure: Nigeria/HQ- number of deals

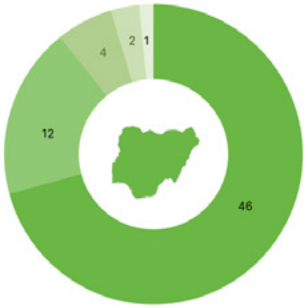
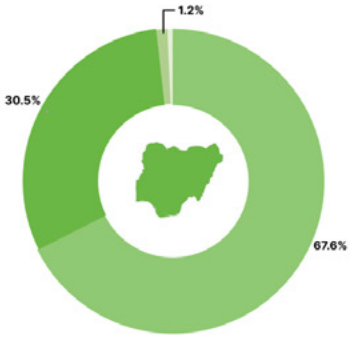


Figure: Nigeria/HQ- sum ($) of deals



Sector breakdown

A quick look at the funding trends over the last decade reveals that the lion's share of funding and venture capital in Africa goes to fintech, followed by e-commerce, driven by the growth of the digital economy and a largely untapped market. However, climate investments are catching up quickly, reflecting the interest and ambition of stakeholders to prioritise impactful technologies and long-term gains. As noted, climate, waste, and agriculture investments often fall under the category of 'impact investments' where the goals of a social or environmental impact are considered alongside the expectations of financial returns. This approach has also been an important way of validating and justifying investments to companies where the financial returns on investments might be lower, but the impact and positive benefits

The chars showcase funding allocated to Kenyan and Nigerian climate-tech startups, categorised by the company incorporation.

on society hold a bigger weight in the decision-making process.

Within climate tech, renewables emerged as the top-funded in terms of deal volumes between 2014-2022, receiving 75 per cent of the disclosed funding. Climate-focused agriculture solutions emerge second.

Figure: Sector distribution by sum ($)

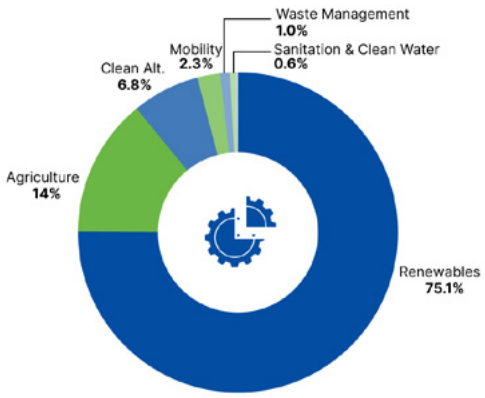
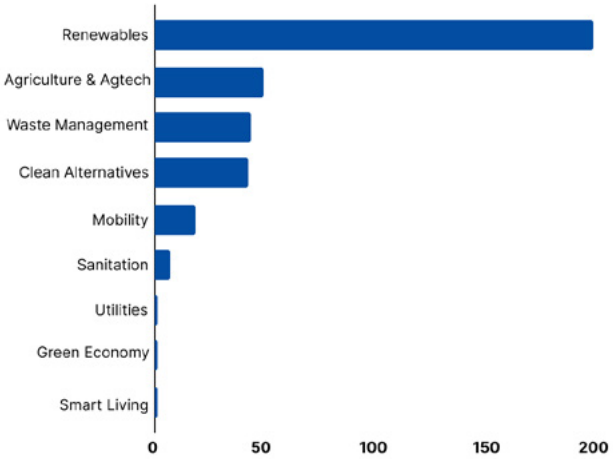


Figure: Sector distribution by number of deals



Product breakdown

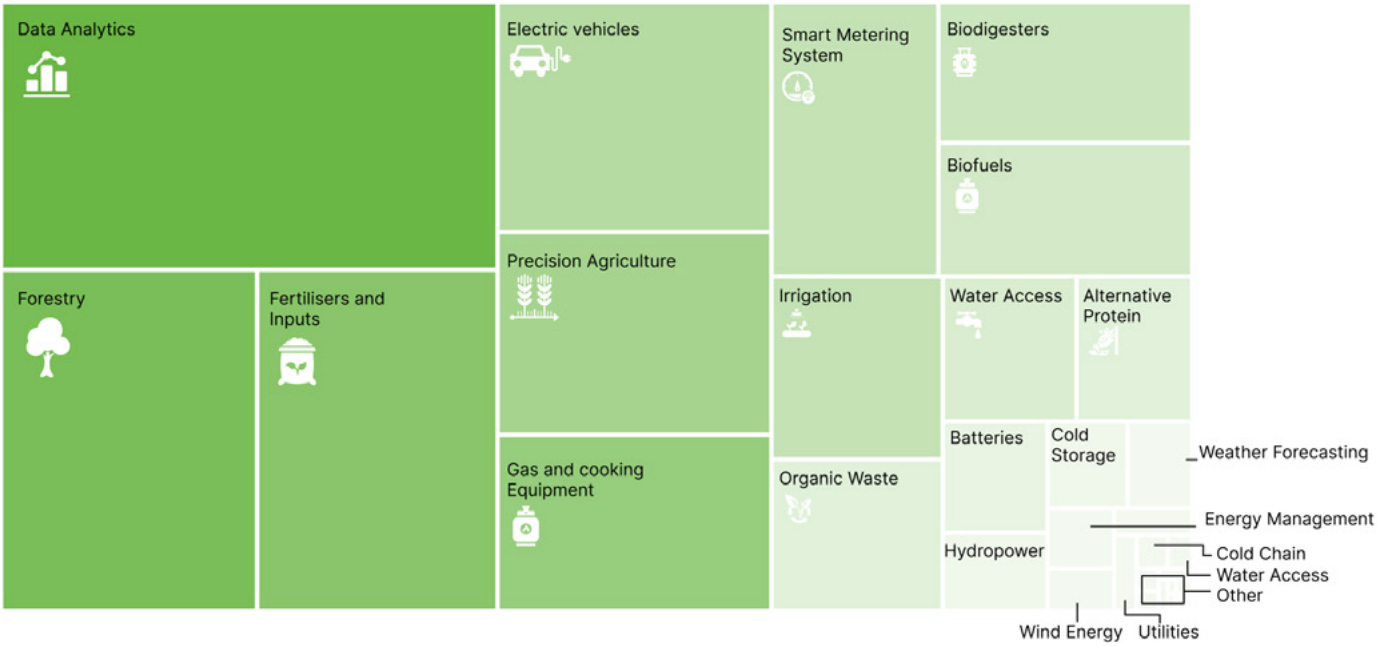
In terms of products, solar energy solutions received 73 per cent of the total funding. As recently as April 2022, Sun King (former Greenlight Planet), a solar energy company active across Africa and Asia raised a $260 million Series D round, one of the single largest injections of capital into a company of this nature on the continent. There are several more solar energy providers active continent-wide of similar size, such as Bboxx, Zola, M-KOPA, and d.light, which have all raised above $100 million. Deals of this magnitude to the start-up ecosystem in Africa have more commonly been associated with fintech or logistics, with several companies reaching unicorn status and exceeding $1 billion valuations in the last couple of years. While it is becoming increasingly likely that a climate tech company can attract large investments, it is key to recognise that funding is highly skewed towards PV distributors and PAYG solutions.

Aside from solar, precision agriculture, forestry, fertilisers and inputs, electric vehicles (EVs), and gas and cooking products are also emerging as top contenders in the climate tech sphere. Companies like data analytics platform Gro Intelligence and aerial imagery company Aerobotics, for instance, are helping farmers, businesses, and governments make data-driven and actionable decisions about land, ecology, and the environment. In the realm of forestry, Komaza is reviving degraded land, and fertilisers and inputs solutions like Good Nature Agro are helping farmers grow stronger crops. In the clean cooking space, distributors are replacing

Figure: Product distribution by sum ($)

hazardous materials used by households with cleaner fuel alternatives, such as Koko Network's liquid ethanol cooking fuel and Powerstove's smokeless biomass stove. The electric mobility space is seeing designers, manufacturers and distributors of parts and vehicles, such as MAX.ng, Zembo, and MellowCabs, contributing to cleaner urban areas. Other areas in the climate tech sphere, such as waste management and sanitation, remain disproportionately underfunded. Although these industries have been slower to catch up, companies like plastic waste recycling company Coliba and sanitary waste to energy venture Sanergy are making headway, showcasing the impact potential and attracting funding.

Figure: Production distribution by deal numbers (excl. solar)



Stage Breakdown

Between 2018 and Q1 2022, the majority of deals are invested at the early stages, ranging from angel and incubation/acceleration to Series A rounds. This also includes the 82per cent of deals below $1 million that were unspecified in terms of stage. In fact, 26 per cent of all announced deal sizes were undisclosed during the period.

In contrast, the figures suggest the top 15 funded companies raised 71 per cent of total funding volumes, illustrating that a few companies are absorbing the largest volume of deals in the climate tech space. There is a clear need for greater funding opportunities across the board, targeting all stages and more diverse products. A diagnostic of investors into the sector, particularly at the early stages, shows a large presence of development finance institutions and impact investors, ranging from EDFI Electrifi, USAID, and the USADF, offering both equity and grant funding; accelerators including the UNICEF Startup Lab and Katapult; and targeted sustainability challenges with awards and prizes, sponsored by energy companies including TotalEnergies and Kosmos Energy.

Figure: Number of deals by stage (excl. unspecified stages)

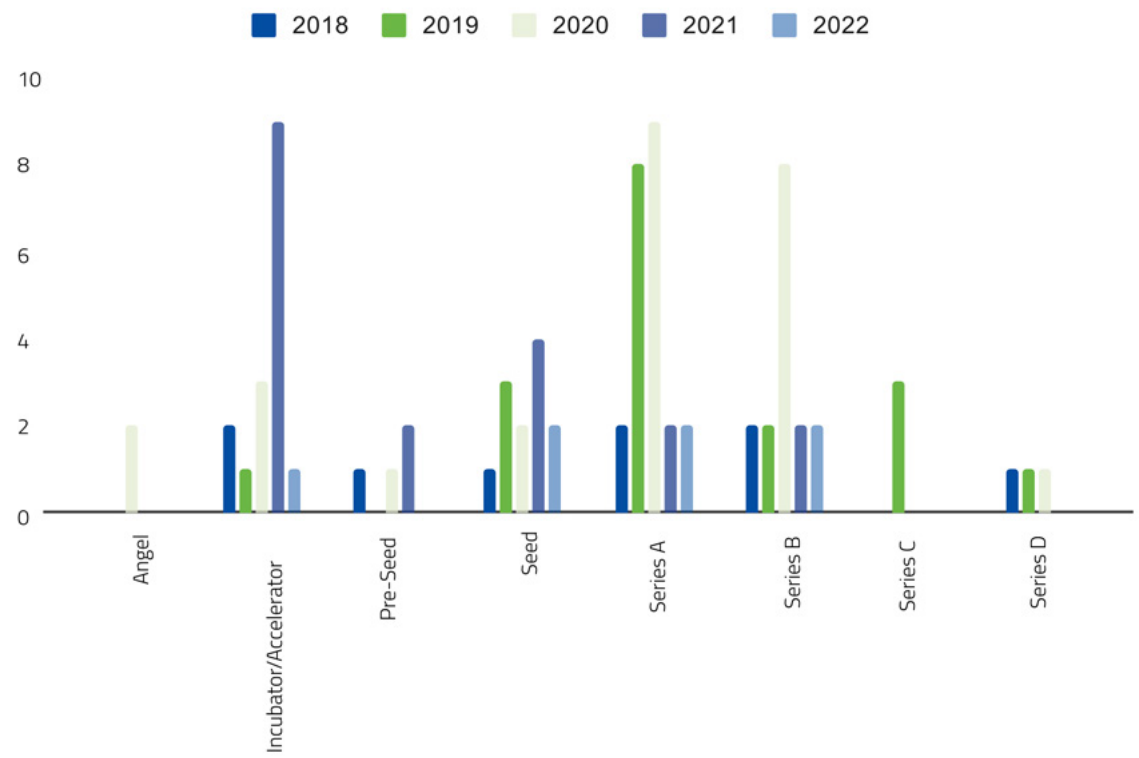
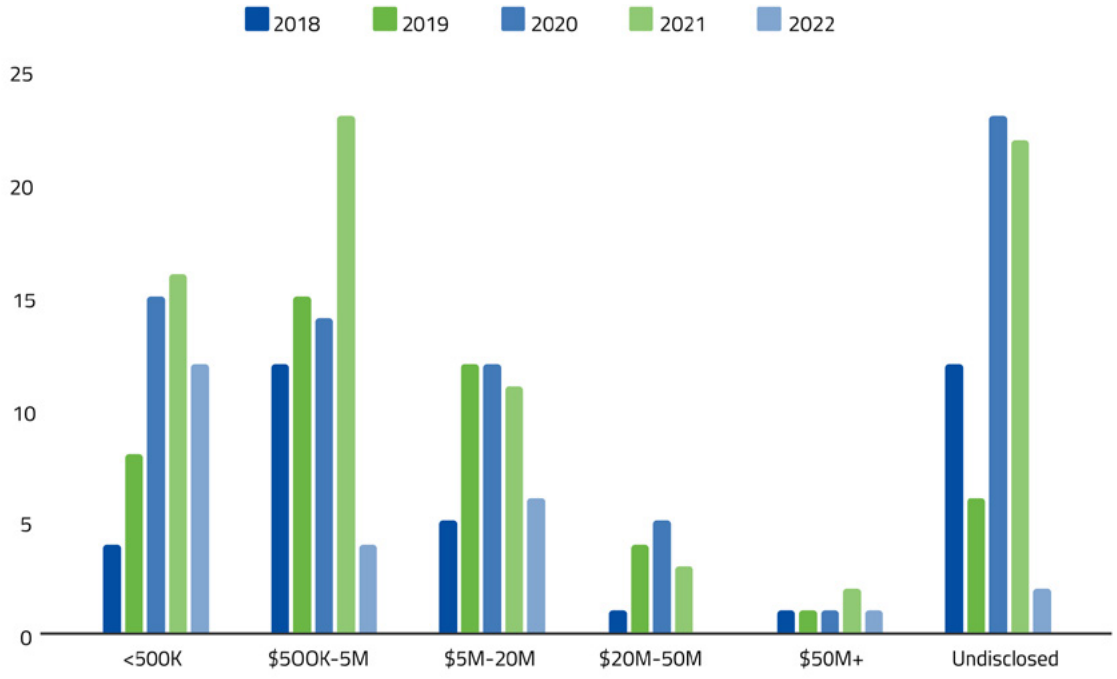


Figure: Number of rounds by deal size range



OBSTACLES TO GROWTH

While progress is being sought on all fronts, from government commitments and policies to the growing funding landscape, and new innovative solutions disrupting the market, several obstacles remain for the climate tech space to thrive.

A technical and resource-intensive industry

Some climate tech solutions are difficult to develop due to the high cost associated with developing hardware or the technical expertise needed to develop technology and digital products. Others require a lot of time, labour, or data to get up and running. Weather forecasting company Ignitia, for instance, ran about 121 experiments for about 5 to 6 years before going commercial in 2016 with its first product, iska, which is a 48hr rainfall forecasting service via SMS. This is in part due to the high level of historical climate data and testing needed to ensure that the forecasts and weather predictions are as accurate as possible. Kwabena Amoateng Frimpong, Regional Director at Ignitia, explains that "*the proof of concept is key. With Ignitia, we pilot the services on a small scale first, and then, when people see that it works and that it helps them plan and operationalise their business, they are more likely to adopt the solution*". Aidun from Persistent Energy suggests that developing successful climate tech models is more about innovation than invention, both in terms of the technology and the market. In practice, configuring the technology and working out the model to minimise costs and optimise impact is as important as the technology itself. Along these lines, Daniel Kitwa Deputy Director Energy Access Finance at GreenMax Capital Advisors urges aggregation of technologies along the value chain to avoid duplication of efforts, thus improving unit economics, and ensuring product-market fit.

The cost of scaling

Another prominent challenge to developing climate tech is scaling. Jade Bouhmouch, Managing Partner at Ambo Ventures, argues that the lack of affordable, scalable, and effective technologies is heightened by the lack of resources going into the sector, despite there being a wealth of entrepreneurs capable of building climate tech at scale. He adds that there is an unprecedented amount of commercial pressure for climate tech companies on the continent. The competitor landscape for climate tech start-ups is complex in that established non-climate-focused alternatives exist and are often the solutions of choice - e.g. diesel generators. This means that to be successful, climate entrepreneurs must build solutions that are more commercially attractive.

To grow to scale and offer competitive alternatives to traditional products, climate tech providers need significant upfront and ongoing investments to fund the physical roll-out of operations in additional locations which is often complex and capital intensive. Kitwa explains that because climate tech (i.e. particularly those providing decentralised energy access and productive use solutions) is a CAPEX heavy sector, companies entering the space need substantial upfront capital and sufficient runway before achieving scale. As a result, patient capital and blended finance are increasingly popular instruments to support the industry. Vincenzo from OOLU suggests that even if more money is now invested into the clean energy space, the market in need of these solutions is growing at a faster pace than what can be developed, especially for those off grid households and small businesses that are hard to reach by conventional grid expansion. He also stresses the importance of managing the hype and expectations of the climate tech space, stating that "*there are a lot of opportunities, but there is also a lot that remains to be done. Some mistakes will happen, and building solutions made to last cannot be done without further support*".

Lack of early-stage funding and opportunity

The challenge of scaling is often directly linked to the stages of funding accessible. Martin Kiilu, Head of Advisory at GrowthAfrica, explains that there is an increase in climate innovations across the continent. Except for a handful of success

stories, most companies and innovations are at an early stage of growth and development with limited revenue, funding, and growth. These impact-driven businesses face limited access to funding, partly due to market limitations, including low market and customer adoption and low ability to pay for solutions. These challenges mean businesses don't meet the profit and scalability expectations that more commercially minded investors have of their portfolios. Therefore, a blended capital approach is needed to help derisk the markets and support the innovations at the early stages of development and growth.

Kitwa provides a case, saying that "*EVs are a good example of a product that has good potential for profit, particularly in the 4-wheeler space. The challenge is that 2 wheelers have a better case for reaching the bottom of the pyramid customers and creating affordability. This might mean that companies have to focus on bootstrapping through the commercial sides of the business while going into more impactful segments*". Certain products, such as solar home systems and precision farming solutions have been able to balance these expectations and gain traction, while other products such as certain waste management solutions, have been slower.

Early-stage funding is particularly hard to come by for climate-focused SMEs given that much of the funds focused on the sector are looking at larger projects which typically have a minimum investment of $25 Million. For instance, Nils Razmilovic, Co-founder at Tamuwa, explains that there are few investors targeting renewable biomass, given the early stage of the sector in East Africa which means the investment ticket size is smaller and often akin to a venture capital size investment between 500k to $2 Million. However venture capital in the region is biased toward more technology-driven industries and ventures leading to a lack of capital in the renewable biomass sector. Tumusiime from Yo-Waste echoes this notion, suggesting that most investors are still profit-oriented and lean more towards high-growth sectors. Tumusiime suggests that even though more impact-focused investors are entering the market, it remains hard to raise funding until you have a proven and tested model. Finding the balance between profit and impact will therefore be crucial for climate tech solutions to attract more investment across the continent.

Companies can also benefit from diversifying their business model to attract different types of funding. Héloïse Zimmermann, Senior Carbon Manager at Komaza, observes that beyond traditional investors active in the forestry industry, there are increasingly more investors now interested in carbon financing, representing a new asset class for early- and growth-stage climate tech companies to leverage.

Localising solutions

Several of the biggest companies in the climate sector are headquartered outside of the continent and operate globally, while locally-founded companies are yet to attract similar levels of investment. Alp Katalan, Senior Associate at the Carbon Trust, expresses the importance of supporting and developing local climate solutions to increase the impact and strengthen the local ecosystems. This also means moving beyond the more established start-up ecosystems in Kenya, South Africa, Nigeria, and Egypt, to distribute support and funding more evenly across the continent. The Carbon Trust is one of a growing number of organisations that are targeting innovators outside these countries, with an aim to showcase the opportunities for impact and climate-driven ventures in under-represented markets. Working in these markets can help to attract additional capital, investors, talent, and innovation to enrich the ecosystem and improve its ability to develop solutions tailored to local realities and support local value chains.

Solutions adapted to the local context can also be more efficient. For instance, Ignitia is a technology

company that has purposefully adapted their solutions to the tropics and local weather patterns. Frimpong explains that the genesis of Ignitia started from the premise that global forecasting models were not optimised for the tropical context, which can be classified as having a tricky climate and chaotic. Accuracy, relevance, and adaptation to the local context are of utmost importance to reduce yield loss, as it uses place-based data to inform more robust decision-making.

Another example is Tamuwa, a producer of renewable biomass briquettes made from sugarcane. Razmilovic from Tamuwa, explains that the principal drivers of biomass energy demand include; population growth, lack of access to renewable substitutes, as well as a growing poverty rate. The solution lies in being able to provide economically viable renewable biomass fuel which will help reduce the pressure on Kenyan forests, which are at current rates being excessively depleted for fuelwood.

Finally, solar solutions are effective across most countries on the continent. Given the vast lack of reliability of the energy infrastructure, the increase in presence of decentralised, autonomous energy solutions such as solar panels has an important economic impact in that it enables a functioning working environment for local businesses by providing necessary underlying services to the public. An open debate on the subject revolves around the implications of having foreign companies acting as substitutes or complements to critical infrastructure versus local players. It can be complex to judge the de facto impact of these companies in the longer run, for instance from the perspective of the need to develop homegrown capabilities in countries where public resources are often overstretched.

Tracking and measuring impact

In order to make a true assessment of the value of climate tech, the impact of the solutions on people and the planet need to be measured, monitored, and evaluated. This is also taking a bigger role in investors' due diligence process, from measuring the megawatts generated, rural populations affected, or amount of waste collected. However, the industry is yet to see standardised approaches to data collection and management, increasing the risk for bias and reducing the clarity around which solutions to target and at what scale. The first step is for investors to include impact metrics in their assessment of returns.

Persistent Energy measures impact based on the lives improved, average growth rate, jobs created and total tons of CO2 avoided, with Aidun explaining that "*within the industry, the ease of monitoring impact differs based on the product. For pay-as-you-go solar, the data on the carbon emitted by cost of kerosene lanterns, or megawatts of clean energy generated by the households and businesses reached, are all data points more readily available. In newer sectors, such as EVs, the metrics to use and measure are still being developed. The critical thing is to find cost-effective and non-intrusive ways of measuring impact that doesn't add another layer of costs for the startups*".

Regulatory challenges to surpass

The climate tech space has also faced many regulatory hurdles across the continent, resulting in slower adoption and growth of solutions. Some examples of impeding policies are outlined below:

1. Energy generation restrictions:

a. In countries like South Africa, there are restrictions on energy generated by private companies that mean that excess electricity from rooftop solar systems cannot be sold back to the grid.

a. Lack of clear policies and frameworks across the region act as a barrier to unlocking support for privately-led renewable energy solutions.

2. Electric vehicle manufacturing and distribution:

a. Many governments are pushing the electrification of transport forward, yet

access to reliable electricity, affordability of the technology, and weak regulations against vehicles with low emission standards make it difficult for electric vehicles to compete.

3. Weak regulation and bans:

a. Governments may impose bans on natural resources. In January 2018, for instance, the government of Kenya introduced a logging ban.
b. Héloïse Zimmermann from Komaza suggests that there is currently a lack of regulation and capacity from the standards to support the expected growth in the voluntary carbon market. She speaks of a need to develop the infrastructure around carbon credits development and issuance if we want to meet the growing demand coming from corporates and investors around the globe.

While regulatory bottlenecks can cripple effective growth and opportunities, the policy landscape is changing rapidly. Governments across Africa are increasingly releasing the brakes on innovation in favour of more sustainable development and growth, representing a vital step forward in advocacy for off-grid innovations. For instance, the Kenyan government is reducing the duty for electric vehicles with electric motors, and the Ministry of Transport has put forward an intention to develop an EV policy. The government also recently reinstated VAT exemptions for renewable energy products, and introduced a tax incentive for carbon trading.

Photo: Sunculture

THE ROAD AHEAD

GLOBAL COMMITMENTS

With the deadline of SDG objectives to be achieved by 2030 quickly approaching, many countries remain off target and will not reach the goals unless significant changes are made. The 2021 United Nations Climate Change Conference, also known as COP26, encouraged targets of net-zero emissions by 2050 and saw governments and large corporates all around the world make pledges to phase out fossil fuel subsidies, reverse deforestation, financially support countries to adapt to climate change and work towards zero emissions.

It's therefore not surprising to see climate tech and climate-centred solutions increasingly being integrated into global agendas, from the micro to macro spheres. Fahmy from YTG explains that it is crucial to link local and national projects to the international dimension to increase global traction and awareness around sustainability efforts. COP27, the 2022 United Nations Climate Change Conference, will take place in Egypt and is expected to build powerful momentum for the climate tech space in the country, which in turn will help direct more resources towards localised adaptation and mitigation technology, as well as bridge the gaps between research, academia, start-ups, governments, investors, and the commercial sector.

Events and global agreements will be a continuous driving force in keeping the conversation and commitments alive, as well as connecting and regenerating synergies between key stakeholders, from the consumer to the private sector, support landscape, and governments.

CREATING NEW ASSET CLASSES

According to a report from the Ecosystem Marketplace, an initiative of the non-profit organisation Forest Trends, the global voluntary carbon market was on track to reach $6.7 billion by the end of 2021, representing an opportunity for early- and growth-stage climate tech solutions to plug into a growing market to access support beyond equity or debt financing. Carbon trading can be defined as a market-based system that allows sustainability-driven companies to sell credits to companies with high greenhouse gas emissions. Carbon credit also can be a way of passing savings directly onto the consumer. Czajkowski from SunCulture explains that "*SunCulture's strategy to employ carbon credits is price reduction — passing the monetisation directly onto end-users — versus direct revenue generation for the company. A reduction in the pricing of products in turn increases the size of the addressable market as the solution becomes more affordable to users. This will expedite business growth and scale while also being in service of our vision, mission, and goals*".

Because of the newfound interest in carbon markets, the demand has exploded and there is a mismatch between supply and demand that is pushing up the prices of offsets. Bouhmouch suggests that high-quality African credits trade at a premium as there are multiple essential economic, social, and climate benefits linked to them. While there are many positive attributes to the carbon market, Razmilovic explains that there is a lack of transparency and discrepancy in value that limits the potential of the offset market to work efficiently in financing genuine projects which tackle climate change. To solve this issue, Tamuwa has partnered with the HBAR foundation and developed a platform called CYNK on Hedera blockchain which will provide transparency, trust and connectivity, allowing projects in Africa to access funding and receive fair pricing for their carbon assets by virtue of direct access to climate markets.

THE ROLE OF PARTNERSHIPS

Collaborations and partnerships are vital to progressing both the supply and demand of climate tech solutions. Start-ups can work with

other start-ups to bridge gaps in the supply chain, investors can co-invest in innovative solutions, and all stakeholders have a role to play in fostering solutions that mitigate climate change and create resilience in communities. A key strategy of the YTG enterprise, for instance, is to partner with industry leaders, hubs, investors, academia, and corporations in order to promote and deliver sustainability awareness and entrepreneurship across several realms. Ignitia's weather forecasting services can be accessed by other agtech platforms, such as crop insurance providers, through an API that feeds them data and helps them optimise their services. Tamuwa partners with the Rainforest Alliance to train industries such as the KTDA on co-firing with renewable briquettes, which allows them to reduce wood burning dependence by at least 50%. Linkages such as these are essentially strengthening several nodes of the supply chain at once.

Sustainable design principles

While each stakeholder is bound by their own agenda and targets, the climate tech space would benefit from a more conscious effort and intentionality around making sustainability a design principle in delivering support. Climate-focused strategies are needed at the national, regional, and global level. Tackling shared challenges, such as water shortages, through knowledge- and skill-sharing between governments would serve to strengthen the climate tech sector. The support landscape can also optimise impact by working together to de-risk investments and deliver more targeted programmes for early-stage entrepreneurs. Partnerships are also conducive to leveraging key strengths of individual players and fostering the transferral of knowledge and skills between industries and countries. This is particularly important for the creation of localised solutions. The concentration of funding to a few large companies also indicates a need to distribute resources more evenly across the ecosystem. Kitwa from GreenMax Capital Advisors suggests "*if only a few companies are getting support from the active investors, it means that the sector is only growing linearly as opposed to exponentially. If we are able to diversify support, the perceived risk of the market goes down. This includes providing tailored first loss risk mitigation products to partner lenders in the sector, deploying more concessional capital through Results Based Financing (RBF) schemes, and aligning fund managers' capital to the cash flow cycles of the underlying business models being underwritten*".

Bridging market gaps through partnerships

For governments, leveraging private sector initiatives and identifying support actors that are involved in the enablement of early-stage companies can be instrumental to fill gaps in public service provision and capacity, hence contributing to meeting national environmental goals, such as the electrification rate or waste management needs. Vincenzo from OOLU argues; "*year to year, there is a lot of innovation, impact, and investment happening, and providers are increasingly targeting local problems or broken services that the government does not always have the capacity to fix*". Yo-Waste, for example, liaises with the municipalities in Uganda to avoid cross-over of services. In this sense, startups and the private sector can act synergistically towards national agendas, which can be externally financed or supported. One way in which Ambo Ventures enters new markets, for instance, is by partnering and working with central governments, corporates, and innovation hubs to create climate tech innovation programmes, regulations, and policies. Another example is Katapult, whose dedicated Africa vertical is co-funded by the Norwegian Agency for Development Cooperation (NORAD). NORAD supports Katapult with funds and resources to facilitate the adaptation and delivery of tailored programmes, and de-risk entry to new markets. For NORAD, Katapult's efforts link to the agency's broader mission of catalytic impact: mobilising private capital into emerging economies to help meet the SDGs.

SUMMARY OF GAPS & OPPORTUNITIES

1. Ecosystem: Climate tech needs to be treated differently than other disruptive technologies on the continent and this should be reflected in the ecosystem. There's a need for patient and impact-focused investors who are focused on more than financial returns and can step in at different stages, or new asset classes that help climate tech companies enter the market. You need sandboxes for start-ups that can more easily bypass legal and regulatory hurdles, and you need specific technical expertise to engineer complex solutions in a space where deep expertise is already limited. There is also a need for greater knowledge and awareness around the support needs of climate tech-focused businesses vis-a-vis other sectors, such as the technical aspects of setting up a company.

2. Geographies: While climate change is a global problem, you need local solutions. Products need to be adapted to the unique weather events of the country or context, the supply chains, and natural resources within the country. It's important to move beyond the more established markets to make this a reality.

3. Products: There's a crucial need to de-risk innovation for second and third-tier products that aren't currently financially viable to foster more innovation, and look beyond some industries that are crowding out investments. This is where DFI's and impact investors can play a role.

4. Investors: Although most deals occur at the early stages, there is a gap in seed stage investors as compared to other sectors. Governments can play a role here by offering tax incentives or special concessions for investors targeting this stage of climate tech.

CONCLUSION

This report looked at the role played by startups and SMEs focused on developing climate tech solutions across emerging economies and the network of actors that, by supporting and financing entrepreneurs, contribute to the green transition and broader government agendas. In this sense, renewable energy, sustainable agriculture, waste management and recycling, and circular economy solutions are targeting a substantial addressable market, solving major local challenges, all while accelerating the green transition.

Though regulatory, technical, and financial obstacles remain, stronger synergies between stakeholders are creating more efficient value chains, better opportunities, and a fast-growing industry. The rise of the support landscape and impact investing is playing a vital role in driving sustainable businesses forward, helping bridge financing gaps, and giving credibility and security to projects typically deemed high-risk to further attract both local and international investment. More partnerships between players will serve to build more impactful, sustainable, and commercially viable climate tech solutions in the long-term.

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