



### Her Excellency the Secretary General of COMESA Madame Chileshe Kapwepwe with Dr Morris Akiri, Senior Regional Director, CABI Africa at the signing of the MoU (Credit: CABI)

### CABI renews agreement with COMESA

CABI has renewed its agreement with the Common Market for Eastern and Southern Africa (COMESA) which will see the two organisations continue efforts towards supporting member countries in increased trade of their fresh fruit and vegetables.

Dr Morris Akiri, Dr Noah Phiri and Phyllis Ombonyo, from CABI's regional centre for Africa, met with representatives from COMESA and the Zambian Government as part of a ceremony to sign a Memorandum of Understanding (MoU) between the two parties.

Among those in attendance from COMESA was Her Excellency the Secretary General Madame Chileshe Kapwepwe who said "COMESA values CABI's programmes on the ground but also its strong research capacity which acts as a basis for evidence-based policy formulation."

The cooperation will see CABI and COMESA supporting countries, such as Zambia, a COMESA member state, improve their phytosanitary measures and quarantine services to manage potentially devastating crop pests and diseases.

Part of the current MoU with COMESA will see CABI continuing to support member countries in the establishment of an Early Warning and Emergency Response System (EWERS) and information sharing platform for pests that also include the fall armyworm.

The collaboration will also involve the conducting of joint training sessions on Pest Risk Analysis (PRA), diagnostics and horizon scanning of pests as well as the development of Integrated Pest Management (IPM) plans that include the use of safer-to-use and more environmentally-friendly biological control agents.

Dr Akiri, Senior Regional Director, CABI Africa, said, "Both CABI and COMESA have a shared vision and mission of taking measures to promote sustainable agricultural practices and food security in the region. This is in order for member countries to maximise their potential to trade not only with each other but also with more lucrative global markets."

After the meeting to sign the MoU, CABI met with Dr

Kajarayekha Kenneth Msiska, Director of Zambia's Plant Quarantine and Phytosanitary Service, who spoke about how CABI had supported the country to resume trading its maize with South Africa after a temporary suspension due to interceptions prior to export occasioned by the False Codling Moth.

Dr Kajarayekha Kenneth Msiska added that CABI and COMESA will look towards supporting Zambia in dealing with False Codling Moth which is also a risk to avocado crops. This will involve a joint proposal to be submitted to the Standards and Trade Development Facility (STDF) on addressing False Codling Moth with a focus on greater market access.



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### Increasing safe and efficient trade of agriculture in East Africa



A project to help increase safe and efficient trade of agriculture in East Africa through enhanced sanitary and phytosanitary (SPS) systems is making good progress, CABI can report.

The East African Community (EAC) is one of the fastest-growing regional economies – with agriculture playing a major part. However, the trade of agriculture between EAC partner states is hindered by issues around unharmonized sanitary and phytosanitary (SPS) standards.

The SPS capacity assessment sought to determine investment opportunities and recommend other interventions that can be supported under the Trade of Agriculture Safely and Efficiently in East Africa (TRASE) project.

CABI worked in partnership with law firm KO and Associates (KOA) to conduct a comprehensive SPS legal and technical assessment of five target EAC countries and collated results into two consolidated reports. The aim was to help create more robust SPS systems, thereby strengthening the productivity and profitability of crops, resulting in greater access to regional and international high-value markets.

Recently, under TRASE, CABI has trained Plant Health Inspectors from NPPOs and the private sector horticultural apex associations. The topics included WTO SPS Agreement, selected International Phytosanitary Measures on Inspections, integrated measures for pest risk management, PPP frameworks to enhance application of phytosanitary measures and increase compliance and trade.

It also included the development of Standard Operation Procedures on sampling, inspections and certification for priority agricultural commodities.



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### Multiple channels work best when sharing pesticide use information



Giving farmers the tools they need to make pesticide use safer is vital. Mass media campaigns can help to share pesticide information with them. But the campaigns work best when they're delivered using multiple forms of communication.

This is what a new CABI-led study has discovered. The research focused on information campaigns to reach smallholder farmers in Rwanda and Uganda. It concentrated on the effects of mass media campaigns on pesticide use.

CABI collaborated on the study with the Rwanda Agriculture and Animal Resources Department Board (RAB). The researchers found that pesticide use campaigns are critical. They improve farmers' knowledge about pesticide risks and safety measures. They also boost the adoption of environmentally safer alternatives to synthetic pesticides. And they increase

the use of personal protective equipment (PPE).

But farmers are more likely to adopt new practices when the information is delivered via multiple channels. Dr Justice Tambo is the paper's lead author. He talked about behaviour changes in pesticide use. And he noted that shifts are more pronounced when multiple information channels are used to reach farmers. These mass media channels include interactive radio, plant health rallies, mobile SMS and video screenings.

The evidence is clear in Rwanda, especially around Integrated Pest Management (IPM). Farmers are more likely to adopt multiple IPM practices when they receive information via radio, SMS and plant health rallies.

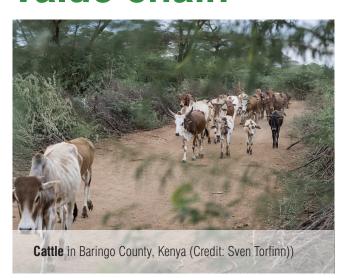
Smallholders in Rwanda are benefitting from pesticide safety advice. Those who received advice were 48% less likely to experience pesticide-related health symptoms. This is in comparison to farmers who didn't receive safety information.

Read this paper in full with open access: <u>Using mass</u> media campaigns to change pesticide use behaviour among smallholder farmers in East Africa



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### Strengthening Kenya's livestock value chain



CABI is conducting research and analysis of Kenya's livestock value chain to see if it might be further strengthened through investments, trade and collaborations with the United States agricultural sector.

The work will aim to help improve the livelihoods of farmers and contribute to increasing food security for Kenya's 47 million residents.

Half of Kenya's agricultural workforce is employed in the country's livestock sector which in 2020, for instance, was worth USD \$995 million.

The livestock sector is a key part of Kenya's agricultural sector but it remains underdeveloped, is largely

informal and unorganized, which often results in low productivity, and farmers are not able to realize maximum profits for their stock.

Other constraints include inadequate market infrastructure and marketing systems and weak animal health services which all add extra pressure on a livestock sector facing growing demands for food, jobs and income.

CABI is seeking to identify which commodities, functions and nodes within the Kenya livestock value chain may be prioritized for investment, trade and collaboration by the US agricultural sector.

The first tier of activities involving a situation analysis of the livestock sector covering genetics, live animals, feed, dairy, beef, mutton, chevon, poultry, pork, camel and honey sub-sectors is complete.

Constraints in the beef sector included the noncommercial nature of the pastoral production system which is relied upon as a source of beef and which manifests in low offtake rates; there is also seasonality of supply of slaughter stock due to climatic shocks, insecurity, physical barriers to accessing markets, inadequate fattening systems and old, obsolete and encroached abattoirs.

For the dairy sector, constraints included high prevalence of informal sector in dairy marketing and consumption, unhygienic handling and quality assurance, resulting in poor milk safety and quality and excessive wastage, inadequate access to artificial insemination (AI) resources, feed inadequacy, insufficient knowledge on the management of fertility of dairy cows by farmers, high cost of packaging material for processing and overall high cost of production."

An assessment of the economic and livelihood performance of each value chain/sub-sector and their comparative advantages was also carried out. From that, beef and dairy value chains ranked highest, with dairy being were identified as a priority for further study in tier two.



# Aflatoxins, rabies and misuse of pesticides and animal health drugs are top 'One Health' issues



A Ugandan livestock officer vaccinates a dog against rabies during a crop-livestock clinic session (Credit: A. Ziryamunno)

Aflatoxins, rabies and misuse of pesticides and drugs are among the top issues prioritised to be addressed at joint crop-livestock clinics set up to help improve the health and livelihoods of smallholder farming families in Uganda.

So far, over 1,600 smallholder farmers have been reached at six joint-crop livestock clinics in the districts of Mukono, Luwero, Buikwe, Kayunga, Kagadi and

Hoima, where a 'One Health' approach to agricultural productivity is being adopted.

### Crop and livestock problems

The clinics have received nearly 1,900 enquiries on both crop and livestock problems – of which 8.4% are related to 'One Health' issues, with the top problems being aflatoxins, rabies and misuse of pesticides and drugs observed from the participating communities.

While the main crops presented with issues at the clinics include bananas, coffee, cocoa, tomato, other cereals and fruits and vegetables, animals taken for advice on vectors, feeding and shelter include cattle, chickens, pigs and goats.

Rabbits, turkeys and pet cats and dogs have also been taken for advice on their welfare and vaccinations.

### Work in partnership

Work is being carried out in partnership with the Ugandan Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Makerere University, and local

governments of the districts where the joint croplivestock clinics are run. The aim is to enable male and female smallholder farmers to address major health and production problems affecting crops, livestock and food safety.

In Kenya, joint clinics have been created in Trans Nzoia and Elgeyo districts and are being run by officials from crop, livestock, veterinary and public health departments.

### Scaling up clinics

The initiative aims to directly benefit 11,550 smallholder

farmers (40% women) and 100 crop and livestock service providers, and indirectly benefit 34,650 other farmers and the wider community (40% women), and 300 crop and livestock service providers.

Tablets have been provided to clinic staff to capture data and 49 staff (agriculture, veterinary, supervisors, regulators/MAAIF, university) are now equipped with skills on data handling and management.



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# FAIR data important for digital plant health service in Malawi



CABI has highlighted the importance of adopting the principles of FAIR data in a workshop held to help establish a digital plant health service in Malawi that will ultimately ensure greater food security and benefit over 100,000 smallholder farmers.

Henry Mibei, Manager, Digital Development, and Dr Tom Chaloner, Data Policy Analyst, Digital Development, presented at the two-day workshop in Lilongwe, Malawi's capital city, to raise awareness of Findable, Accessible, Interoperable, Reusable (FAIR) data.

They particularly sought to apply the FAIR data concept to the Malawi Digital Plant Health Service (MaDiPHS) project in respect of collecting information on data/knowledge products that could be of use to the project.

MaDiPHS aims to build and expand on the successes achieved by existing digital plant health systems such as PlantVillage Nuru (a pest and disease monitoring

tool), the Norwegian Institute of Bioeconomy Research's VIPS pest prediction platform, a Farmer Interface Application (developed by the International Institute of Tropical Agriculture) and the CABI-led Plantwise programme and Pest Risk Information Service (PRISE).

The goal of the project is to establish a decision support service that can be of assistance in the management of the most economically important agricultural pests and diseases in Malawi for maize, tomato, cassava, groundnuts and banana.

At the workshop, Mr Mibei and Dr Chaloner introduced the concept of metadata and how metadata helps people find and reuse data. Accordingly, they outlined the Metadata Template that will be used by the MaDiPHS project to identify and describe data that could be of value to the project.

The CABI representatives also helped participants understand the importance of identifying challenges and restrictions to accessing and reusing data in MaDiPHS as well as suggestions to overcome these issues.

CABI is leading on data organization and management which focuses on enhancing access to data and information resources as part of the MaDiPHS ecosystem.

It is also responsible for a range of tasks including the mapping of data ecosystems, identifying key data sets and brokering access to the data held by data holders and ensuring that data is shared with clear and appropriate licences.



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### How community conversations help to close the gender gap in Burundi



The gender gap in agriculture is a big challenge. In Burundi, of all the time spent on agricultural work, women make up 60%. But they have limited access to agricultural resources, including knowledge.

Helping women to become more productive in farming is critical for global food security. So how can we close the gender gap?

To help address the gender gap in rural farming communities in Burundi, CABI introduced community conversations. These are groups where people come together to discuss important issues affecting the community.

The goal of community conversations is to shift social

norms. They seek to address issues such as the distribution of unpaid care work. They consider subjects like women's decision-making role in agriculture. And importantly, they tackle women's access to agricultural extension advisory services, such as plant clinics and plant health rallies.

Community conversations work because the model brings people together to share opinions and thoughts that might otherwise be left unchallenged. They include people from different parts of society. This includes community and religious leaders, land owners, plant doctors, labourers, housewives – men and women from all walks of life. They come together every two weeks and participate in guided Q&A-style conversations.

The discussions help men and women to see life from each other's perspectives. They challenge social norms and get participants to think about why exactly men do certain jobs and women do others. They look at ways in which communities can benefit from helping women farm more effectively and productively. They present win-win situations.

The conversations identify issues the community needs to focus on and work towards changing. They run over a period of up to one year. It's a long process that involves the same group of people. But the conversations have the potential to make lasting change.



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### Distributing cassava cuttings for healthier crops in Zambia

CABI is working in partnership with the Zambian Ministry of Agriculture (MoA) and the Seed Control and Certification Institute (SCCI) to promote the growth of healthier cassava crops in Zambia.

Recent efforts have focused on training and distribution of disease-free cassava cuttings to 500 smallholder farmers in the Nsama District of Northern Province.

The initiative follows a campaign in August last year to curb the spread of Cassava Brown Streak Disease

(CBSD) which can lead to a total loss of crop and severely impact food security and the livelihoods of farmers and their families.

Estimated losses due to CBSD in Zambia are around 55% of total cassava production, equivalent to monetary losses of over US \$500,000. But it is believed that planting disease-free cuttings can help reduce the spread and impact of CBSD.

There has been increased demand for cassava tubers



Smallholder farmers, CABI and Government representatives welcome the cassava cuttings for healthier crops free of Cassava Brown Streak Disease (Credit: CABI)

from Zambia Breweries, Zhongkai international, Itabwa Investments and Sunbird Bioenergy Zambia Ltd who need over 50,000 tonnes of annual cassava feedstock for brewing, mining, confectionary and biofuel

Steward Katele, District Commissioner, Nsama District, told farmers and members of the community as the cuttings were being delivered, that the Government has responded positively and in very good time for the district to be more food secure again.

The beneficiaries of the cassava cuttings have so far been trained on the correct cultivation and management of the cassava crop and look forward to reaping a harvest free from CBSD.



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## CABI to help increase vegetable production in Kenya and Ethiopia



**CABI** is working in partnership with the WorldVeg- V4P&P project to help reverse that trend (Credit: CABI)

CABI has joined forces with the World Vegetable Centre and SNV to help increase healthy vegetable production and consumption in Kenya and Ethiopia as part of a five-year project funded by the Ikea Foundation.

Under the auspice of 'Veggies 4 Planet & People

(V4P&P),' CABI is consolidating and documenting information from the databases and other sources to provide expert advice and insights on vegetable pest problems and farmer practices in Kenya and Ethiopia.

The project aims to create jobs, increase incomes – particularly for women and youth – and improve environmental and human health through the safe production of vegetables. This includes, where possible, the adoption of safer-to-use and more environmentally friendly biological control agents – as part of integrated pest management plans – with a reduced reliance on chemical pesticides.

CABI will also recommend regenerative approaches and the steps required to introduce further low-risk solutions that are not yet available in Kenya and Ethiopia.



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### CABI to step up fight against pests and diseases of papaya in Uganda



CABI is working in partnership with the National Agricultural Research Organisation (NARO) and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to step up the fight against pests and diseases of papaya in Uganda.

As part of the 'Protecting Biodiversity through Biocontrol of Papaya Mealybug in East Africa' project, which is funded by the Darwin Initiative, CABI has been testing for signs of papaya mealybug and the suspected viral disease locally known as Kigenge.

CABI scientists investigated farming practices and management options for pests and diseases of papaya in eight locations across Uganda. These included Lira, Kayunga, Mukono, Ntungamo, Luwero, Masaka and Mpigi.

In total, 67 samples of disease plant were collected,

processed and shipped for identification.

The research team determined that Kigenge is widely spread in all the survey districts but with more infestation in Kayunga and Mukono, that commercial farmers are using more pesticides (especially in Kayunga) but that non-commercial farmers are doing nothing to manage the disease at all.

Fernadis Makale, Research Officer, Invasive Species Management, said, "Once identification is confirmed, it is suggested that there is continuous engagement with the papaya farming community and mass awareness of Kigenge and its impact and management.

"There should also be consideration for the development of an integrated pest management package for the papaya value chain to include this disease and other pests of interest."

It is hoped that the encyrtid wasp *Acerophagus* papayae could prove to be an effective biological control agent to mitigate papaya mealybug.

Working with the Kenya Agricultural and Livestock Research Organization (KALRO), CABI performed releases of the wasp at three coastal counties of Mombasa, Kwale and Kilifi.



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# Providing technical expertise to implement Africa's Plant Health Strategy

CABI is providing technical expertise to help the Inter-African Phytosanitary Council of the African Union (AU-IAPSC) implement the Plant Health Strategy for Africa with the ultimate aim of increasing the food security of the continent.

CABI is working with the AU-IAPSC to roll out the strategy which will address inadequate and apply better sanitary and phytosanitary (SPS) measures in Africa.

Ultimately, the aim is to create robust plant health systems which will bring about reduced risks from devastating crop pests and diseases, increased trade and the protection of biodiversity.

The strategy will be presented to the Specialized Technical Committee (STC) who will review and approve the strategy. Once approved, an implementation plan will be designed and will guide the adoption of the Plant Health Strategy.



**Participants who attended** a workshop to develop the Implementation Plan for the AU Plant Health Strategy in Lusaka, Zambia, (Credit: CABI)

CABI's technical and organizational will then help to implement the African Union Plant Health Strategy and its associated activities. These include supporting the AU-IAPSC to expand Member States' understanding of existing phytosanitary best practices such as risk-based official controls in operations (inspections and certification), derived from Pest Risk Analysis (PRA), surveillance and other measures for market access.

The work will also see the finalization of the AU-IAPSC pesticide and biopesticide regulatory guidelines and the development and validation of protocols for the field testing and registration of safer-to-use and more environmentally-friendly biological control agents.

Dr MaryLucy Oronje, SPS Scientist, said, "There is currently a lack of clear national and regional

coordination frameworks of National Plant Protection Organizations which are underfunded and unequipped to implement international standards."

So far, a study on pesticide and biopesticide regulatory guidelines and the development and validation of protocols for field testing and registration in AU Member States has been carried out.

Furthermore, phytosanitary capacity building for AU Member States and an assessment of the adoption of Electronic Phytosanitary Certificates in AU Member States are also underway.



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### Mapping weather and climate services for crop pests and disease



The role of weather and climate services and digital tools for crop pest and disease management in Kenya has come under the spotlight as part of a stakeholder consultation held in Nairobi.

The workshop was delivered by CABI as part of a collaborative project exploring climate service provision for crop pests and diseases, led by the Community Network for Vector-Borne Plant Viruses (CONNECTED), University of Bristol, UK and the Met Office through the

University of Bristol Met Office Academic Partnership.

The aim of the workshop was to better understand current needs for weather and climate services, information and tools, to tackle crop pests and diseases in Kenya.

The event brought together representatives from the Kenya Meteorological Department (KMD) and Kenya Plant Health Inspectorate (KEPHIS), along with plant health extension and quarantine officers, to identify gaps in the current provision that new information tools might be able to fill.

This included considering short-term (weather/ seasonal) perspectives alongside longer-term (climate change and future climate projections) time scales to understand risks, drivers and needs. Participants also considered how farmers and local communities are managing the impacts of changes to weather and climate patterns on crop diseases. This way information and tools can make best use of local knowledge and support the communities who will use them.

Recent CABI-led projects where data has helped farmers mitigate crop pests and diseases using weather-related information has included the Pest Risk Information Service (PRISE).

PRISE predicts the timing of the most effective and efficient control against pests using a novel combination of earth observation technology, real-time field observations and plant-pest lifecycle modelling to deliver a science-based service.



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## CABI helps Kenyan farmers combat invasive apple snail



**Invasive apple snail** egg mass on plant stems (Credit: Romi L. Burks)

In 2019, Kenyan farmers first started reporting instances of the invasive apple snail (*Pomacea canaliculata*) infesting rice paddy nurseries. Thanks to speedy action by the Kenya Plant Health Inspectorate Service (KEPHIS) and the Ministry of Agriculture, intervention actions were rolled out across the country. Importantly, these interventions spread awareness of the new invasive pest and the threat to rice farmers.

### Invasive apple snail, a destructive species

The IUCN/GISD lists the invasive apple snail among its 100 most damaging invasive species. The snail usually lives in waterways feeding on young rice seedlings or

shortly following transplanting into paddy fields.

### Research conducted on invasive pest

KEPHIS, in collaboration with CABI's PlantwisePlus programme, conducted numerous studies, confirming the presence of the apple snail within the Mwea irrigation scheme. This water system produces roughly 70% of the country's rice and covers paddy fields of more than 11,000 farmers.

Kenya's Ministry of Agriculture and CABI have held capacity-building workshops for representatives across Kenya's rice farming regions. After that, the information shared was implemented in plant health rallies in Western Kenya to promote cultural practices to prevent new infestations.

### Viable biopesticide needed

Unfortunately, the identification of a viable biopesticide is a lengthy procedure. Scientists need to carry out detailed studies to confirm the environmental impacts. In the meantime, advisors are recommending farmers remove water immediately from rice fields after irrigation as wetting and drying is the most effective known strategy for preventing the snail pest. Notably, farmers report that this practice makes farms safe from the pest after three weeks.



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### Making production standards work for Kenya's growers



This year, CABI participated in the GLOBAL G.A.P Tour held in Nairobi. The event sought to strengthen compliance and expand markets for Kenya's agricultural produce. Convened by Rootooba, the tour raised awareness on updated global food safety standards.

Key speakers noted that there has been a 14% decline in Kenya's horticultural export revenue for the past year. This is due to climate change, which exacerbates pest and disease proliferation. Plus, the high cost of doing business. The sector additionally faces more stringent requirements compelling it to reduce the amount of plant protection products applied. All whilst ensuring that the produce is free from harmful organisms.

Harry Kimtai, the Principal Secretary, State Department for Livestock, Ministry of Agriculture & Livestock Development in Kenya, stated, "Production standards demanded by buyers is evolving; the focus has been on food safety and social accountability but is now extending to include environment and sustainable production."

### How do we make production standards work without increasing burden on producers?

It is necessary to address this pertinent question.

In a session that deliberated on this inquiry, the cost of training, certification and recertification were cited as major constraints to implementation of production standards. Emphasizing the need to synergize KS1758 standard with GLOBAL GAP for fair trade and affordability to ease the burden of compliance.

KS1758 is a Horticultural Code of practice which specifies the legal compliance, responsible procurement of inputs, safe production, handling and marketing of horticultural produce. This code targets all players in the industry including growers, propagators,

plant breeders, seed merchants, consolidators, transporters, traders, shippers and cargo handlers.

### PlantwisePlus promoting the demand for safer food

The two-day conference was thus strategic to CABI, who have been instrumental in assisting Kenyan horticultural producers to meet the KS1758 standard. Through its global programme, PlantwisePlus, that seeks to increase supply of and demand for safer food in local markets.

In collaboration with Fresh Produce Consortium, the programme has trained implementors in post-harvest handling, workers safety, pesticide use, plant nutrition, traceability, and record keeping. CABI seeks to collaborate further with the standard implementation committee (SIC) to train trainers, create awareness of the standard and develop interpretation guides on the standard for smallholder farmers.

### Policy and plant clinics supporting sustainable horticultural production

The plenary sessions also highlighted glaring gaps in the traceability and monitoring compliance of horticultural produce in local markets. And they recommended implementing a policy framework for Maximum Residue Levels (MRLs) testing for domestic markets. CABI wishes to engage policymakers and relevant stakeholders to put in place measures to guarantee food safety for local consumers. A policy brief has been developed and will be used to engage decision makers on critical actions requiring urgent attention.



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### **CABI MEMBER COUNTRIES IN AFRICA**







































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