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An African Perspective for Harmonised Policies Framework on PPPs (PPPs)

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ABSTRACT

In many African countries and elsewhere, the available toolkit for managing pest problems does not always match farmers' needs. For some crop-pest combinations, there may be few or no PPPs (PPPs) registered, or those that are registered may be older, containing more hazardous molecules. Available lower-risk options like biologicals may only be registered for a few crops destined for export markets, or they may not be registered if regulations are not flexible enough to facilitate the review and registration of these tools. Information on maximum residue limits is missing for many crop-pesticide combinations. Meanwhile, in many low-income countries, low-quality pesticides sold on the market occasionally pose challenges to efficacy. These challenges call for a review of the regulatory frameworks for the registration of pesticides and the management of PPPs. In addition, there is a strong need to harmonize existing registration and management approaches for these products among the various countries and subregions. Harmonisation of guidelines for the registration and management of PPPs across African countries could be a powerful tool for addressing some challenges as this would streamline best of practice processes. This paper highlights the success of regional harmonisation initiatives led by the Regional Economic Communities (RECs) in Africa, though not all countries have benefited from these initiatives. It is worth noting that developing continental-level guidelines for registering and managing PPPs could scale up the successes across the entire African continent.

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This requires establishing a continental-level mechanism that involves building on successes on the harmonisation of registration of existing pesticide registration initiatives at national and REC levels, consistent with international standards, and based on World Trade Organization (WTO) agreements. Therefore, this paper proposes a potential modality for developing harmonised guidelines for registering and managing chemical and biological PPPs in African countries under the auspices of the African Union Inter-African Phytosanitary Council (AU-IAPSC). This would align with ongoing initiatives to support continental policies on agriculture and trade.

Keywords: African Union Inter-African Phytosanitary Council, continental guidelines, Plant Health Strategy for Africa, pesticide registration, regional harmonisation, Regional Economic Communities

RÉSUMÉ

Dans de nombreux pays africains et ailleurs, les outils disponibles pour gérer les problèmes de ravageurs ne répondent pas toujours aux besoins des agriculteurs. Pour certaines combinaisons cultures-ravageurs, peu ou pas de PPP (produits phytopharmaceutiques) sont enregistrés, ou ceux qui le sont peuvent être anciens et contenir des molécules plus dangereuses. Les options à moindre risque comme les produits biologiques peuvent ne concerner que quelques cultures destinées à l'exportation, ou ne pas être enregistrées si les règlements ne sont pas suffisamment souples pour faciliter leur examen et enregistrement. Les informations sur les limites maximales de résidus sont absentes pour de nombreuses combinaisons culture-pesticide. Par ailleurs, dans de nombreux pays à faible revenu, la qualité médiocre des pesticides vendus sur le marché pose parfois des problèmes d'efficacité. Ces défis appellent à une révision des cadres réglementaires régissant l'enregistrement des pesticides et la gestion des PPP. De plus, il est urgent d'harmoniser les approches existantes d'enregistrement et de gestion de ces produits entre les différents pays et sous-régions. L'harmonisation des lignes directrices pour l'enregistrement et la gestion des PPP à travers les pays africains pourrait constituer un outil puissant pour relever certains défis, en rationalisant les processus exemplaires. Cet article met en lumière le succès des initiatives d'harmonisation régionale menées par les Communautés Économiques Régionales (CER) en Afrique, bien que tous les pays n'en aient pas bénéficié. Il convient de noter que le développement de lignes directrices à l'échelle continentale pour l'enregistrement et la gestion des PPP pourrait généraliser ces succès à l'ensemble du continent. Cela nécessite la mise en place d'un mécanisme continental s'appuyant sur les réussites en matière d'harmonisation de l'enregistrement des pesticides au niveau national et des CER, conforme aux normes internationales et basé sur les accords de l'Organisation Mondiale du Commerce (OMC). Par conséquent, cet article propose une modalité potentielle pour l'élaboration de lignes directrices harmonisées pour l'enregistrement et la gestion des PPP chimiques et biologiques dans les pays africains sous l'égide du Conseil Phytosanitaire Interafricain de l'Union Africaine (AU-IAPSC). Cela s'inscrirait dans les initiatives en cours pour soutenir les politiques continentales sur l'agriculture et le commerce.

Mots clés : Conseil phytosanitaire interafricain de l'Union africaine, lignes directrices continentales, Stratégie pour la santé des plantes en Afrique, enregistrement des pesticides, harmonisation régionale, Communautés économiques régionales

INTRODUCTION

Agriculture plays a crucial role in Africa (Diao *et al*., 2010; African Development Bank Group, 2016; Alliance for a Green Revolution in Africa, 2022; FAO, 2023). It is the primary food source, providing employment and sustenance for millions of people, especially in rural areas (FAO, 2023). Cash crops and horticultural products contribute significantly to foreign exchange earnings and are, therefore, vital to the economies of many countries (FAO, 2023). Investing in agriculture can stimulate economic development in rural regions, improve infrastructure, education, and healthcare, and limit migration to urban areas (Hope, 2012). Although agriculture accounts for between 50% and 70% of employment in African countries, it contributes to only 15% of the total gross domestic product GDP, and Africa imports $35 billion of food annually (OECD/FAO, 2016). Therefore, the sector needs to be strengthened to achieve Sustainable Development Goals, particularly eradicating hunger and poverty and facilitating trade throughout the value chain.

Several challenges hinder Africa's agricultural productivity (Shimeles *et al.,* 2018; Bjornlund *et al.,* 2020). These include climate change, limited access to inputs, land degradation, unpredictable rainfall patterns, inadequate infrastructure, and limited knowledge and sharing of good farming practices. Additionally, productivity is threatened by crop pests, pathogens, and diseases (AGRA, 2022). The impact of pests[1] is exacerbated by climate change (IPPC, 2021). Increased global trade and limited preventive measures have also led to new incursions of transboundary pests. These biotic and abiotic challenges reduce the economic performance of agriculture on the continent, driving migration and political instability (UN, 2010; Hope, 2012).

The pest management technologies technologies at the farmers' disposal for managing pests and diseases are not always sufficient or tailored to their farming system. Many crop-pest combinations have very few or even no registered PPPs (Ramasamy *et al.,* 2022). Some registered products also contain older and potentially more hazardous molecules as active ingredients, and some of these products are obsolete in their countries of origin (UN, 2010; UNDESA, 2010; 2015). The availability of few registered PPPs is especially the case for minor-use crops a category which, though it contains some of the most nutritious and high-value crops in Africa, might not be of sufficient scale to justify the registration of a pesticide. Furthermore, for many crops of importance in Africa, both for consumption in the region and for export outside of the region, maximum residue limits (MRLs) have not been set by the Codex Alimentarius or at national levels. These "missing MRLs" have been shown to impact trade negatively (United States International Trade Commission, 2020) and have knock-on effects that contribute, for example, to registration gaps. Increasing and emerging pest infestations have become a key driver of pressures that prompt farmers to look for pesticides to use. This results in an increasing number of pest control products being used to protect their crops, evidenced by increases in the numbers of active ingredients registered, the volumes of pesticides imported and produced, and volumes of used (Loha *et al.,* 2018; Kwakye *et al.,* 2019; Jacobi *et al*., 2020; Haggblade *et al*., 2022). Consequently, pesticide regulators in many countries have struggled to keep pace with requests to register new pesticides. In some subregions, it has been observed that off-

label uses of pesticides, sometimes of questionable quality, account for approximately 10% to 30% of all products on the market (MIR Plus, 2012; AU-IAPSC, 2022; Haggblade *et al.*, 2022; UNEP, 2022). The use of unregistered and smuggled products and the sale of banned products and counterfeit pesticides have been reported in many countries (Haggblade *et al.*, 2017; Loha *et al.*, 2018; Kenya Markets Trust, 2021; AU-IAPSC, 2022). This has resulted in frequent MRL detections. The detections of pesticide residues in some crops exported from African countries, which are not registered for use in the country of origin, confirm that there is a problem in this regard. Unregulated PPPs might not be appropriately labelled, making it difficult to ensure their appropriate use, which could pose risks to human health, the environment, and trade. Pesticides are important tools for pest management, and a risk-based and science-based approach allows regulators to manage risks across a pesticide's life cycle. Regulated products can help safeguard farmers and consumers, as well as livelihoods. Unregulated, poor-quality products could result in a higher loss of crops because of the declining environment. Pesticide residues that exceed established MRLs could cause a crop or shipment to be rejected and destroyed. Regulatory frameworks must be consistent with internationally accepted risk-based and science-based approaches.

Overly restrictive hazard-based regulations may prevent the use of essential pest management tools without reducing risks, thereby impeding innovation and access to lower-risk alternatives. Meanwhile, weak regulations could lead to gaps in pesticide value chain management, potentially exposing farmers, farm workers, consumers, and the environment to hazards and harm. A recent global survey highlighted gaps in regulatory frameworks for pesticide value chain management worldwide and at a regional level in Africa (WHO and FAO, 2019; van den Berg *et al.*, 2020). Legislation, registration, and worker protection were three key areas where shortcomings were noted. Many countries still lack comprehensive and up-to-date laws governing the production, import, distribution, and use of pesticides. Weak or outdated registration systems can allow substandard or counterfeit products to enter the market, posing risks to human health, food safety, and the environment. Insufficient worker protection measures often expose farm workers and applicators to hazardous chemicals without adequate training, equipment, or medical monitoring, which can lead to acute poisoning or long-term health impacts.

Regional harmonisation of the registration and management of PPPs is a potentially powerful approach for addressing some of the above-mentioned challenges. Although the regulatory science for pesticide management is highly technical, countries and regions have developed a suite of international and regional guidelines and standards to support pesticide management by regulators (IAPSC and CABI, 2022). However, there are disparities in these guidelines, and hence harmonisation of the national regulations with regional and international regulations, standards, and guidelines would support the implementation of best practices. This has the potential to increase access to agricultural products in lucrative markets. In some instances, existing guidelines for pesticide management do not cover all priority topics (synthetic chemicals, biopesticides, biostimulants, etc.) or might require further adaptation to the African context. Similarly, where appropriate technical guidelines on pesticide management exist at international, continental, or sub regional levels, implementation is lacking at the national level for reasons such as lack of knowledge and capacity, obsolete

regulations, political opposition, or other challenges. In some instances, localisation could help to address additional priority topics or adapt to the African context.

This paper aimed to make a case for establishing an African continental mechanism to support the harmonisation of pesticide management, focusing on developing and promulgating guidelines that support the registration and management of chemical and biological PPPs. The paper provides an overview of the needs addressed by regional harmonisation, the current status of regional harmonisation in Africa, and the options available for regional and continental mechanisms. This is further elaborated through a case study on regulations and guidelines for registering biopesticides. The paper concludes with a proposed modality and way forward for continental harmonisation.

METHODS

In this review, we considered information on all initiatives supporting the harmonisation of the registration and management of PPPs in Africa. We looked at initiatives led by the African Union Commission (AUC) and each of the Regional Economic Communities (RECs) officially recognised by the AUC, namely the Arab Maghreb Union (UMA - https://maghrebarabe.org/en/), Common Market for Eastern and Southern Africa (COMESA - https://www.comesa.int/), Community of Sahel–Saharan States (CEN–SAD - https://censad.int/), East African Community (EAC - https://www.eac.int/documents/category/ pesticides), Economic Community of Central African States (ECCAS - https://ceeac-eccas.org/), Economic Community of West African States (ECOWAS - http://www.ecowas.int), Intergovernmental Authority on Development (IGAD - http://www.igad.int), and the Southern African Development Community (SADC http://www.sadc.int,https://health.uct.ac.za/environmental-health-projects/southern-african-pesticide-regulators-forum-sapref) . Additional information was also obtained on the contributions of five other organisations (both national and regional) that are working towards regional harmonisation of policies for the registration and management of PPPs, namely: Central African Economic and Monetary Community (CEMAC - https://www.cpac-cemac.org/drupal-8.9.5/), Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS - https://www.cilss.int/), West African Pesticides Registration Committee (WAPRC - https://ecowap.ecowas.int/ecowap-sector/2), Union Economique et Monétaire Ouest Africaine (UEMOA - https://www.uemoa.int/), and the International Centre for Genetic Engineering and Biotechnology (ICGEB - https://www.icgeb.org/, https://www.sabiop.co.za/project/).

Data were gathered through a literature review, and examination of regulations retrieved from governmental websites. For example, the Food, Agriculture and Renewable Natural Resources Legislation Database (FAOLEX) (https://www.fao.org/faolex/en/), key informant interview consultations with representatives of the African Union Inter-African Phytosanitary Council (AU-IAPSC), the RECs, and national governments. Additionally, we analysed recommendations from two stakeholder consultative workshops, namely the AU-IAPSC Inter-African Phytosanitary Council Workshop on Strengthening Member States and Regional Economic Communities RECs, Pesticides and Biopesticides Registration Guidelines in May 2022 in Nairobi, Kenya; and the Workshop on Advancing Regulatory Harmonisation and Biopesticide Innovation in Africa held in March 2024 in Cape Town, South Africa. Furthermore,

several recent situation analysis study reports covering pesticide policy were also reviewed, including reports by AATF, the African Agricultural Technology Foundation (2013); Diarra and Haggblade (2017); Kwakye *et al.* (2019); CPAC (2020a and b); AGRA, the Alliance for a Green Revolution in Africa (2021); Haggblade *et al.* (2017, 2022); Chinyama and Kyampaire (2022); and AU-IAPSC, the Inter-African Phytosanitary Council and CABI (2024a and b).

FINDINGS

Benefits of regional harmonisation. Many regions worldwide, including Africa, have adopted the regional harmonisation of the processes for the testing and registration of pesticides, as well as the recognition and sharing of data as a means to pool resources, share expertise, and improve the quality of risk assessments of PPPs (Van den Berg *et al.,* 2020). Harmonisation of regulatory procedures for pesticide testing and registration can improve coordination by pooling limited governmental resources, saving costs, reducing trade barriers, and diminishing incentives for smuggling. Regions can promote the registration of safer PPPs and pesticides with shared data requirements, reducing the potential impacts on human health and the environment and ensuring agricultural sustainability while optimising resources between national governments and regional bodies. Harmonisation also supports common goals, such as operationalising the single market established by the African Continental Free Trade Area (AfCFTA) through a unified policy. Such a policy could be utilised to increase trade in agricultural products by promoting a common approach to the registration and recognition of pest control products, which could then increase intra-regional trade in agricultural products. However, these benefits would be limited if the decisions on the approach to pest control taken by a single regional economic bloc are not aligned with those applied by the rest of the continental partners. This would likely also be true for the continent of Africa if the approach used is not aligned with the risk-based policies of international standard-setting bodies applied in the rest of the world. Harmonised continental guidelines for pesticide registration would establish a common approach for reviewing new chemistries, products, and uses. Through mutual recognition, they could speed up product registration across countries. This would provide farmers with access to newer, safer crop protection products or more effective tools needed to contain pests.

Status of regional harmonisation of PPPs in Africa

Continental harmonisation initiatives. The African Union's Agenda 2063, through its Comprehensive African Agricultural Development Programme (CAADP) and the AfCFTA, aims to improve livelihoods, prosperity, and food security through agriculture-led development and to support countries to enhance their resilience to climate variability. Some means of achieving these goals are facilitated through improved trade-related capacities, agricultural research, technology dissemination and adoption. A key objective for action of the recently adopted Plant Health Strategy for Africa (PHSA) 2022-2036 is the enhancement of harmonised legislation, standards, and procedures – including those for the registration of PPPs – across countries and regions to support the removal of tariff and non-tariff barriers, in order to realise the full operationalisation of the AfCFTA agenda.

The African Union Inter-African Phytosanitary Council (AU-IAPSC) is a Specialized Technical Office of the Department of Agriculture, Rural Development, Blue Economy, and Sustainable Environment (DARBE) of the African Union and also the Regional Plant

Protection Organization (RPPO) for Africa. The mission of the AU-IAPSC is "*to develop, promote and coordinate sustainable Plant Health systems among continental, regional and national actors for increased agricultural production and market access* (AU-IAPSC, 2022)." The AU-IAPSC provides a regional forum for cooperation and the full implementation of the PHSA. The AU-IAPSC Secretariat oversees the work on pesticides, handled within the framework of an integrated pest management (IPM) strategy, which is a critical pillar of the PHSA. In pursuit of the implementation of the PHSA, the AU-IAPSC seeks to ensure cooperation and the use of a harmonised approach in all areas of plant protection where governments take official measures, including a harmonised approach for the registration and management of PPPs.

The AUC and the Specialized Technical Committee (STC), in 2017 and 2022, recommended harmonising the registration of PPPs. The STC requested that the AU-IAPSC to lead the development of relevant continental guidelines to harmonize the registration of these products for the improvement of plant health. Subsequently, the AU-IAPSC has since convened several meetings with the RECs and AU Member States to agree on a process for the regional harmonisation of PPPs. National agricultural policies are often inward-looking, fragmented, and sometimes obsolete, with little revision. Furthermore, language barriers and long bureaucratic processes for technology validation and clearance discourage private-sector investments, denying millions of farmers access to technologies.

In numerous African nations, pesticide legislation originates from the 1970s or 1980s and does not fully conform to international standards, such as the FAO/WHO International Code of Conduct on Pesticide Management. For instance, antiquated pest control statutes may lack provisions addressing emerging issues such as biopesticides, counterfeit product controls, or the disposal of obsolete stocks. Certain countries lack a definitive legal framework for regional data sharing concerning risk assessments, thereby complicating mutual recognition of registrations. This results in duplicated registration trials and costly, time-consuming re-evaluations within each jurisdiction.

In several nations, multiple agencies share overlapping responsibilities in pesticide management (e.g., agriculture, health, environment, trade), yet they often operate independently with ambiguous coordination mechanisms. For example, a national agricultural policy might designate the Ministry of Agriculture as responsible for pesticide oversight, while separate environmental legislation assigns aspects of this responsibility to an environmental agency, with no clear protocol for collaboration. Such fragmentation hampers the implementation of joint registration schemes or mutual recognition initiatives within RECs, such as the East African Community (EAC) or ECOWAS.

In some countries, national registration procedures mandate repeated efficacy trials at the local level for products that have already been approved in similar agro-ecological zones. For example, a PPP registered and tested in Kenya may still be subjected to redundant full trials in Uganda or Tanzania, despite comparable local conditions. This practice increases costs for manufacturers and delays farmers' access to safe, effective products.

Moreover, pesticide regulatory guidelines are often published in languages that are not easily accessible to applicants across borders (e.g., French versus English). For instance, applicants operating across the ECOWAS region are compelled to

translate and adapt dossiers into multiple languages and formats. Such requirements discourage smaller enterprises from registering products regionally.

Collectively, these issues hinder the realisation of regional mutual recognition systems (e.g., ECOWAS regional pesticide registration, CILSS Sahelian Pesticide Committee, or the SADC Pesticide Registration Guidelines). Consequently, farmers face disparities in access to safe, affordable PPPs across borders, and the movement of counterfeit or substandard products through less-regulated entry points is facilitated. However, the PHSA (2022-2036), implemented by AU-IAPSC, is committed to improving production and productivity while enhancing trade at regional and continental levels. Therefore, the regional harmonisation of PPPs is essential for achieving the PHSA goals.

Subregional initiatives. The eight RECs recognized by the African Union are groups of African states that have grown individually, each with its own histories, roles, structures, and levels of integration. The RECs support the economic integration of their members and the development and harmonisation of agricultural policies. Their work is interlinked with that of the African Union, and the RECs serve as the building blocks of the AU.

Many RECs have established initiatives to harmonise PPP registration and management. A recent analysis found that participation in one or more regional harmonisation initiatives is relatively high, with 93% of AU Member States participating in one or more initiatives (Figure 1). However, data were missing for some countries, such as Algeria, Morocco, and Tunisia, and some RECs, including CEN-SAD, IGAD, and UMA, suggesting that these countries and RECs might be outside of the existing harmonisation frameworks for the registration and management of PPPs. Conversely, 16 countries (Burundi, Chad, DR Congo, Eswatini, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe) are currently participating in the harmonisation initiatives of multiple RECs.

While participation in regional harmonisation initiatives is high, the harmonisation system at the continental level remains fragmented. Sub-regional harmonisation initiatives vary considerably in terms of their histories and levels of engagement, integration, and activity. For instance, some sub-regional harmonisation initiatives for registration and management are still in the early stages, such as those of COMESA. In contrast, others have roots that extend over 30 years and are highly integrated. The Sahelian Pesticides Committee (SPC) of the Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel (CILSS), which is the Technical Secretariat for the Sahelian Zone, including nine member countries, is the longest-running regional initiative for the harmonisation of the registration of PPPs in Africa, dating back to the 1990s. Based on the experience of the SPC (CSP in French) and following a tripartite agreement between ECOWAS,

Figure 1. Map illustrating country participation in regional harmonisation initiatives (IAPSC and CABI, 2024).

CILSS, and UEMOA, this experience is being extended to the 16 West African countries and Chad through the establishment of the West Africa Pesticide Registration Committee (WAPRC).

The WAPRC is an initiative representing the 17 member countries of these three West African intergovernmental organisations. In addition, the 16 Member States of SADC have established the Southern African Pesticide Regulators' Forum (SAPReF). The eight countries in the EAC have established a harmonisation initiative that operates through technical working groups, while the six countries in CEMAC (a subset of countries in the Economic Community of Central African States) have also joined together for the regional harmonisation initiative the Comité des Pesticides d'Afrique Centrale (CPAC). The most recently initiated harmonisation effort, focusing on bioprotectants, is led by COMESA and will cover 21 countries, becoming the largest grouping to date.

The sound management of pesticides and the reduction in risks posed by pesticides to human health and the environment are common goals shared across the sub-regional harmonisation initiatives for the registration and management of pesticides. While the elements and outputs of these subregional harmonisation initiatives vary, there is a shared vision to establish a single regional mechanism for evaluating and registering crop protection products – and, consequently, several subregional pesticides. Several regional guidelines, including those in WAPRC, CPAC, and SAPReF, have been developed with differing scopes and levels of control. Most harmonisation initiatives focus on information exchange, either in general or related to specific types of information, as one of their key functions. Several initiatives maintain lists of authorized agencies for field trials, authorised or accredited laboratories, registered active ingredients and formulated products authorised for sale in the subregion, restricted-use products, and banned

products. Other key functions include a mechanism for liaising, communications and advocacy, domestication, capacity development, data sharing, and monitoring implementation monitoring. In West Africa, WAPRC is upgrading a digital platform to PPPs and enhance information sharing.

While achieving full integration is recognised as a challenge, the lessons learned from the initiatives led by the RECs and other subregional initiatives help to identify effective approaches, potential challenges, and the means for overcoming them. There is momentum in many RECs towards greater harmonisation and integration that should continue to be promoted. For example, although feedback from regulators suggests that the overlaps in REC memberships mutually encourage advancement on the topics, the scope and approaches of different REC-level regulations sometimes lead to misunderstandings (AU-IAPSC, 2022).

The level of engagement between the harmonisation initiatives also varies. For example, some of the initiatives resulting from these efforts have established mechanisms for exchange and collaboration: CPAC is invited to participate in WAPRC meetings as an observer, and vice versa. There is a Tripartite Agreement between COMESA, EAC, and SADC. Meanwhile, some of the key informants indicated that overall coordination between most of the RECs is informal and takes place only to a limited extent. Continental regulations can formalise these coordination efforts. Likewise, across the continent, and even within RECs, the capacities of several countries to implement the regulation procedures of the RECs vary and REC-level guidelines vary considerably. Participation in REC initiatives has provided opportunities to strengthen capacities for many of the member states of RECs. Countries that are members of RECs that do not have an active harmonisation initiative or have an initiative in the early stages may have fewer opportunities for capacity strengthening on the registration and regulation of pesticides. Continental guidelines can help establish continental strengthening.

Modality for continental harmonisation of the registration and management of PPPs. Modalities for the development of continental guidelines have been a topic in various forums, with the consensus that, in order to fulfil the recommendations of the STC, the AU-IAPSC must lead the process, promote their use, and provide a framework for the domestication of the guidelines. Figure 2 suggests a process for the development of such guidelines. The continental guidelines should seek to harmonise existing regulatory systems and regional strategies for emerging plant health challenges on the continent and drive a process for risk-based pesticide registration, thereby supporting timely access to safe, affordable, and quality PPPs and free trade. It is of critical importance to involve stakeholders in its development. Consequently, it is recommended that the AU-IAPSC convene a technical body to review existing experiences and guidelines, adapting them to the continent's realities, with best practices as references for Member States (Figure 2). The Technical Body (convened by the IAPSC) will also ensure the alignment of human, information, capital, and political resources; a communication plan; and monitoring and evaluation frameworks are established. It will ensure that AU and REC decision-making is followed in the adoption and domestication of the continental guidelines. This technical body will also be responsible for exploring options to fast-track the adoption of the new guidelines and the amendment of existing legal frameworks. A preliminary risk assessment and a capacity needs assessment will also be conducted to

identify potential challenges and training needs in implementing the guidelines by RECs and Member States.

Once a mechanism for developing continental guidelines has been established, an expert drafting group should be formed, with expertise on international standards (ie Codex), WTO agreements, pesticide registration systems, and the main categories of biopesticides. Ideally, the drafting group would include representatives of countries that have already established regulatory frameworks for the registration of biopesticides, representatives of subregional harmonisation initiatives, scientists, and the private sector. The Expert Drafting Group will consider the guidelines developed by the EAC and SADC and the input of the Technical Advisory Committee as the basis for developing technical guidelines that will inform the continental guidelines for biopesticide registration.

In addition to the guidelines on harmonizing the registration of PPPs, after a foundation and process are set, the technical body would address other topics of concern to its members, such as guidelines to address counterfeit substances, management of empty pesticide containers and expired PPPs, and quality control, among many other issues.

To achieve this complex goal under its mandate, the AU-IAPSC could use its continental scope to build commitment to the continental guidelines at political and technical levels. To ensure that all perspectives are heard and accounted for, the technical body could be formed and overseen by a Steering Committee (SC) chaired by the Coordinator of the AU-IAPSC or their designee. Learning from other continental and global efforts examples, the SC may be guided, as advised by Technical Advisory Committees, with representations from diverse technical and geographic stakeholder groups, to validate the developed technical guidelines and identify those that include opportunities for joint reviews and mutual data recognition. Key elements of the technical guidelines could include the harmonisation of data requirements, training regulators, sharing of resources, and monitoring. African Union and RECs' procedures for decision-making would be followed during the process. Human, information, capital, and political resources would be mobilised, and a developed communication plan, ready for implementation, will be established for stakeholders, from policymakers to producers, to promote awareness of the harmonised guidelines and support for a phased approach to implementation. Measures for enforcement, monitoring, and evaluation would be developed and shared, and baseline data gathered.

Way forward for continental harmonisation of the registration and management of PPPs. A timeline and the logical steps towards continental harmonisation of the registration and management of PPPs are presented in Table 1. This process would begin with a pilot exercise in Year 1 to draft the continental guidelines that would broadly cover both chemical and non-chemical PPPs. In Year 2, the pilot would proceed with the adoption of the first set of these guidelines. Subsequently, the AU-IAPSC would conduct a stakeholders' analysis and sensitisation review and gather insights about domesticating the guidelines. The AU-IAPSC would thereafter engage with stakeholders to secure the requisite political support. This would culminate in reviewing legal frameworks and encouraging all countries to integrate the provisions of the harmonised guidelines into their regulatory processes to ensure consistency and facilitate cross-border trade. Based on lessons learned from the pilot exercise, the AU-IAPSC, in

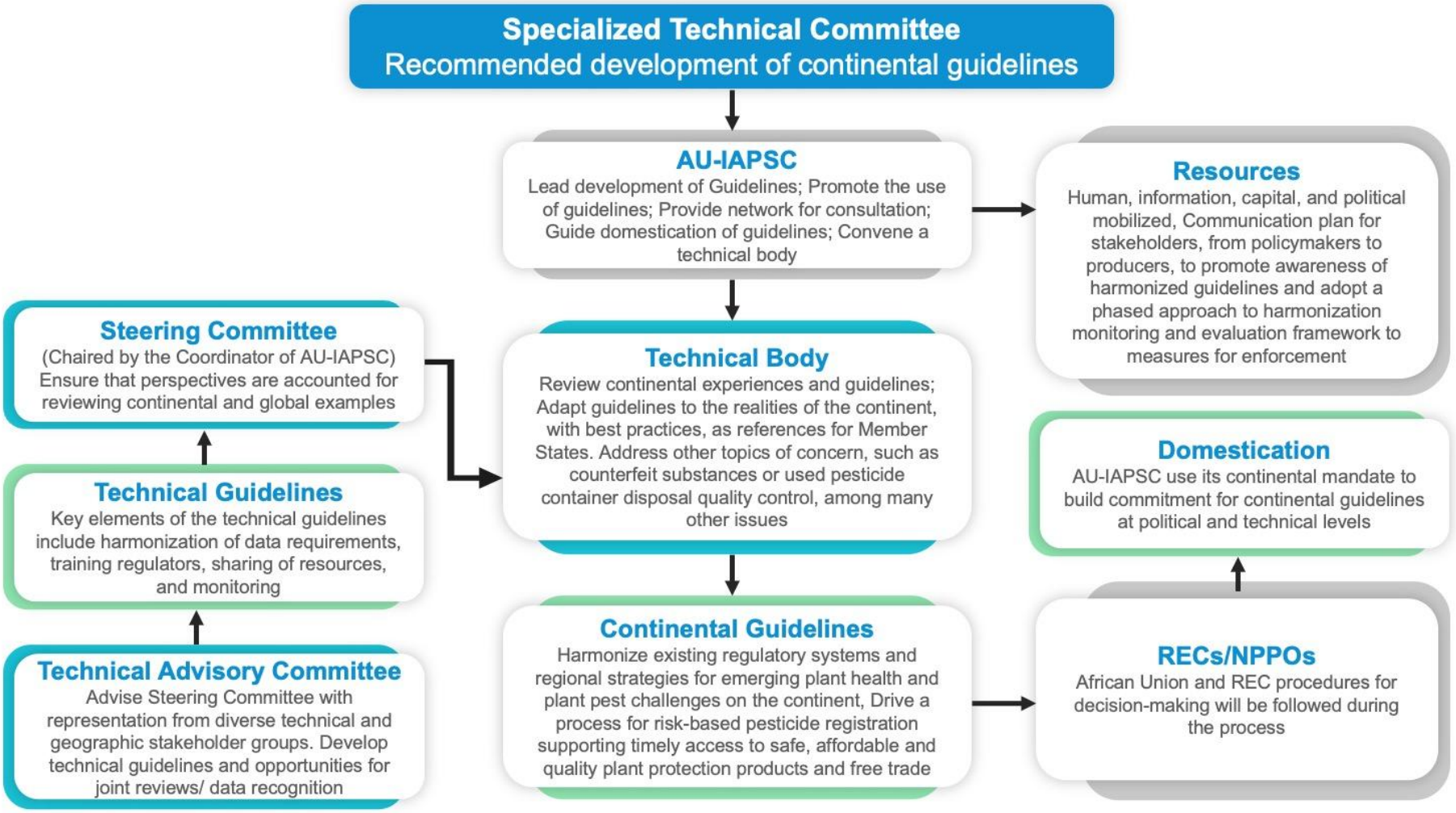

Figure 2. Modalities for developing continental guidelines.

Box 1. Case example: The case for biopesticides

In 2018, the global biopesticide market was valued at $3.5 billion and it is projected to reach $8.5 billion by 2025. Africa's share of this biopesticides market is still comparatively small. For example, for a horticultural crop like tomato, an average of 10 biopesticide products are registered in Africa, 235 in North America, 72 in Europe, and 42 in Asia (CABI Bioprotection Portal, 2024). These differences in the numbers of registered biopesticides could be attributed to several factors, but regulatory frameworks play a significant role. The adoption and widespread use of biopesticide-based technologies in many parts of Africa have been hampered by a lack of supportive legislation (Niassy *et al*., 2022; Wyckhuys and Hadi, 2023). Besides, the process for the registration of biopesticides is the same as for conventional pesticides (IAPSC and CABI, 2024). Obsolete or conflicting regulatory provisions for registering and promoting these bioproducts, or the absence of them altogether at the national and regional levels, and limited financial and technical resources, have contributed to limited biopesticide availability and uptake by farmers in Africa (Deguine *et al.,* 2021; Niassy *et al*., 2022). Therefore, regional harmonisation of standards and procedures is seen by many in national governments, the private sector, farmer organisations and research as a game-changer for maximising farmers' reach and optimal use of biopesticides and biological control products throughout the continent. Biopesticides can offer alternatives for controlling many pests and diseases to address environmental and health concerns and comply with MRL standards imposed by importing countries. Biopesticides have been developed to be safer, more affordable alternatives for controlling a plethora of plant pests. As interest in adopting these products is growing, there is a need to make more biopesticides available for more crop-pest combinations in Africa (Akutse *et al*., 2020). Biopesticides have a lower environmental footprint and can provide a shift of paradigm in crop pest complementary tools in integrated pest management.

Nonetheless, knowledge gaps persist regarding the development, registration, and access to PPPs, such as biopesticides, for farmers. Collective efforts to address these gaps through harmonisation will advance the adoption and advancement of biopesticides as a tool in IPM addressing threats (Deguine *et al*., 2021; Wyckhuys and Hadi, 2023). More vibrant public-private partnerships in the agricultural sector could drive innovation, better production methods, and enhanced economic livelihoods through compliance with ISPMs (Day *et al*., 2022; Niassy *et al*., 2022; Ramasamy *et al.,* 2022). To achieve a sustainable food system, it becomes imperative to scale out agricultural technologies, such as biopesticides and biological control products, to all member states and to enhance their access by millions of smallholder farmers. Harmonizing registration procedures at regional and continental levels will contribute significantly to these efforts to expedite achieving this goal (Niassy *et al*., 2022).

Some progress is already being made in a number of RECs. For instance, harmonised guidelines for the registration of biopesticides have been developed by the EAC (2019 - https://www.fao.org/faolex/results/details/en/c/LEX-FAOC204457/), and similar guidelines are being finalised by SAPReF for adoption by the SADC Member States. Engagement with the EAC by SADC has helped to ensure good alignment between the two sets of guidelines. The guidelines have already been domesticated by some of the Member States of the two RECs and have been used as a reference by countries in other RECs in Africa and beyond.

Table.1. Timeline for a pilot exercise leading to an institutionalised process for the development of continental guidelines for the Registration and Management of PPPs.

Year 1	Year 2	Year 3
Pilot the development of continental guidelines for the registration of PPPs; Information gathering and planning • Form Technical Body and Steering Committee to oversee the pilot • Draft continental guidelines for the registration of PPPs • Draft of continental guidelines for the registration of biopesticides submitted for Member State consultation • Revise the draft of the continental guidelines based on feedback • Establish baseline data and goals	**Pilot continental guidelines for the registration of biopesticides** • Stakeholder mapping and analysis • Awareness raising with stakeholders • Draft guidelines submitted for endorsement • Insights gathered to support domestication • Advisory Council for implementation to coordinate and solve challenges within the scope of the guidelines • Action plans developed to support domestication and implementation • All stakeholders, particularly biopesticide manufacturers, potential registrants and other key stakeholders, are sensitised regarding the new guidelines • Data on registered PPPs in Africa made available and shared	**Build commitment to institutionalising a continental mechanism for developing guidelines for the registration and management of PPPs** • Outreach and awareness-raising • Stakeholder consultations • Present Terms of Reference and Rules of Procedure to the STC for adoption • Capacity-building training sessions for stakeholders to improve understanding and implementation of the guidelines • Resource mobilisation

consultation with RECs and Member States, would then define a process to prioritise follow-on and complementary activities for further implementation. This could include resource mobilisation and a prioritised work programme. A feedback loop would be established, with an "Advisory Council" coordinating the implementation process. The advisory council would comprise members who have already domesticated the guidelines and legal experts who could serve as a reference point before, during, and after implementation. It is envisioned that, with this technical support led by the AU-IAPSC, countries would be empowered to develop clear roadmaps, including timelines, for domestication. Success would be achieved when countries start to utilise the continental guidelines to review and approve new applications. This would also be a major milestone towards implementing the Plant Health Strategy for Africa.

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DECLARATION OF CONFLICT OF INTEREST

The authors declare that they have no conflict of interest in the paper.

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