



The Global Action for Fall Armyworm Control

Action Framework (2020 – 2022)

Working together to tame the global threat

April 2020



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Executive Summary

The fall armyworm (FAW) is a polyphagous insect pest which feeds on maize and on more than 80 crops, including sorghum, millet, sugarcane, vegetable crops and cotton. It is a transboundary pest able to fly over 100 km in a single night.

Native to the Americas, FAW was first detected in West and Central Africa in early 2016. Within two years, it had spread to almost all of sub-Saharan Africa. Now the pest was confirmed in Sudan, Egypt and Yemen, as well as in many Asian countries including India, Bangladesh, Sri Lanka, Thailand, Myanmar, China, Indonesia, Philippines, Laos, Malaysia, Viet Nam, Cambodia, the Republic of Korea, Japan and Australia. This invasive, strong-flying insect pest continues to spread.

FAW causes considerable yield losses in maize and in other key staple cereal crops such as sorghum, millet, and wheat, threatening food security and the livelihoods of hundreds of millions of smallholder farmers and consumers. It is estimated that, for 12 African countries alone, FAW can cause losses of 8.3 million to 20.6 million metric tonnes of maize annually, equivalent to USD 2.5 billion – USD 6.2 billion, and enough to feed 40 to 100 million people.

Population migration to urban cities from rural agrarian communities is most likely to result from FAW infestation determining it as a major threat to food security and the livelihoods of hundreds of millions of the world's poorest.

Another major problem associated to FAW infestation is the increased use of hazardous pesticides as they represent an immediate available solution to farmers but, at the same time, are harmful to humans, animals, aquatic life and environmental health.

FAW is a major threat to crop production. It has a direct effect at socio-economic level by negatively impacting on food and income. It increases global food insecurity, malnutrition, and poverty within smallholder farmers.

FAO proposes a bold, transformative and coordinated [Global Action for FAW Control](#). A total budget of USD 500 million is needed to implement the Global Action in 65 target countries in Africa, Near East and Asia-Pacific in 2020 - 2022. This equates to an estimated USD 450 million for the Global Action and USD 50 million for global coordination.

The goal is to improve food security and the livelihoods of millions of smallholder farmers and reduce environmental pollution through management and control of FAW. The programme will produce **several outputs** that would lead to the following **outcomes**:

- (1) Global, regional, national and farmer-level coordination and collaboration on FAW control enhanced, resulting in implementation of ecosystem-friendly IPM practices and policies.
- (2) Reduce crop yield losses caused by FAW.
- (3) Prevent the further spread of FAW to new areas.

The Global Action programme builds on the work and lessons learned from the FAO-FAW Strategic Framework which started in 2017. The Framework established a partnership for the sustainable management of the fall armyworm in Africa, the Near East and Asia-Pacific dealing with FAW management and testing ecosystem-friendly pest management practices, monitoring and early warning systems, innovations, enabling policies and coordination mechanisms.

The Global Action will strengthen national governments' capacity for immediate support to farmers, policy and capacity development on integrated pest management (IPM) and community-based actions highlighting the fact that there is no one single solution to manage FAW and that empowerment in FAW management comes from the provision of knowledge. Science-based information is critical to empower farmers, extension workers, regulators and policy makers to be able to implement management options with a good understanding of risks and benefits.

A radical change is needed to turn the awareness of the problem into action and solutions residing in the immediate response from the global community to mainstream funds and capacity and act faster than the spread of FAW.

Farmers, research partners, academia, private sector and NGOs are all called upon to contribute to the *Global Action for Fall Armyworm Control* and to ultimately achieve **the 2030 Agenda for Sustainable Development**, including Sustainable Development Goals 1, 2, 3, 5, 12, 13 and 17.

Let us work hand-in-hand to control the global menace of FAW.

Acronyms

ADB	Asian Development Bank
AGE	Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture
ADG	Assistant Director-General
AGP	Plant Production and Protection Division
AGRA	Alliance for a Green Revolution in Africa
AU	African Union
AfDB	African Development Bank Group
APPC	Asia and Pacific Plant Protection Commission
AUC	African Union Commission
CAAS	Chinese Academy for Agricultural Sciences
CABI	Centre for Agriculture and Biosciences International
CILSS	Permanent Interstate Committee for drought control in the Sahel
CIMMYT	International Maize and Wheat Improvement Center
DFID	Department for International Development (UK)
DG	Director-General
DDG	Deputy Director-General
ECOWAS	Economic Community of West African States
EPPO/OEPP	European Plant Protection Organization
EU	European Union
EMBRAPA	Brazilian Agricultural Research Corporation
FAO	Food and Agriculture Organization of the United Nations
FAW	Fall Armyworm
FAMEWS	Fall Armyworm Monitoring & Early Warning System
FEWSNET	Famine Early Warning Systems Network
FFS	Farmer Field School
GA	Global Action (for FAW Control)
GEF	Global Environment Facility
GIZ	German Agency for International Cooperation
IAEA	International Atomic Energy Agency
ICBA	International Center for Biosaline Agriculture
ICIPE	International Centre of Insect Physiology and Ecology
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IBMA	International Biocontrol Manufacturers Association
IFA	International Fertilizer Association
IITA	International Institute of Tropical Agriculture
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
IAPSC	Inter African Phytosanitary Council
HPPs	Highly hazardous pesticides
NIBIO	Norwegian Institute of Bioeconomy Research

NPPOs	National Plant Protection Organizations
NORAD	Norwegian Agency for Development Cooperation
PAN	Pesticide Action Network
PSP	Partnerships Division, FAO
PSU	Penn State University
REC	Regional Economic Communities
RPPOs	Regional Plant Protection Organizations
SADC	Southern African Development Community
SSC	South-South Cooperation
TWG	Technical Working Group
USAID	United States Agency for International development
WTO	World Trade Organization

1. Introduction

1.1 Fall armyworm threat to food security and the environment

Fall armyworm (FAW), *Spodoptera frugiperda*, is native to the tropical and subtropical Americas, where it has been known for several decades as an economic pest of many crop species, especially maize. FAW is now cosmopolitan in distribution (figure 1). It was first detected outside its native range in Central and Western Africa in early 2016 (Benin, Nigeria, Sao Tome and Principe, and Togo). Within two years, it was reported to have invaded all of sub-Saharan Africa, except Lesotho. By July 2018, it was confirmed in Yemen in the Near East, and in India in the Asia region. By December 2018, it had been confirmed in Bangladesh, Sri Lanka and Thailand. By October 2019, FAW has been confirmed in several more countries in the Asia region including Myanmar, China (including the Province of Taiwan), Indonesia, Philippines, Laos, Malaysia, Viet Nam, Cambodia, the Republic of Korea (South Korea) and Japan. In addition to the confirmation in Yemen in 2018, FAW has also been confirmed in Northern Africa and Egypt in 2019. Between January and March 2020, FAW reached Mauritania, Timor-Leste and Australia (see <http://www.fao.org/fall-armyworm/en/> for the current status of FAW spread).

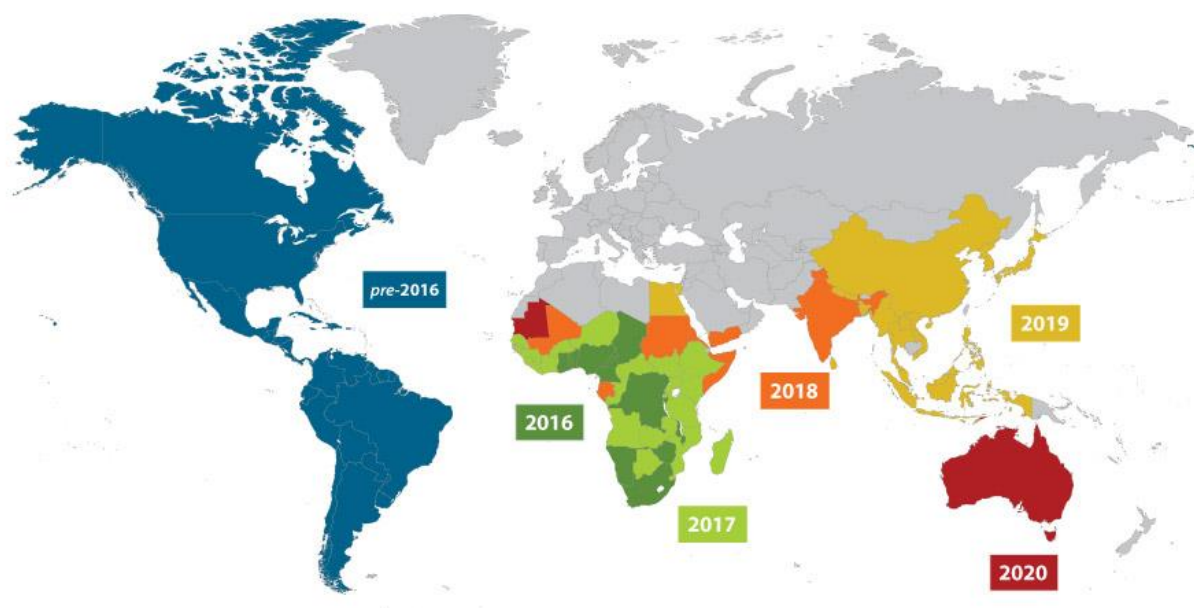


Figure 1. Geographic distribution of fall armyworm as of March 2020

The modality of introduction of the FAW from its native home in the tropical and sub-tropical regions of the Americas to Africa, the Near East and Asia after several decades, then to other areas including southern Europe is still speculative. Its full range of ecological fitness is also well known, but so far, it has shown a high level of ecological adaptation. A scale up of FAO's engagement to support countries and farmers is needed in Africa, Asia, and the Near East where the FAW has spread and continues to spread quickly across countries and borders. The pressure

to scale up response is further compounded by the potential risk of introduction and spread in southern Europe and Oceania.

FAW is highly destructive. CABI in 2017 estimated that FAW has the potential to cause maize yield losses of 8.3 to 20.6 million tonnes (which could feed 40.8 million to 101 million people) annually, valued at between USD 2.5 to USD 6.2 billion, in the absence of proper control methods, in 12 African maize-producing countries (*Day et al., 2017*). The FAW does not distinguish between large-scale crop production and smallholder, subsistence production. Most affected farmers are smallholder farmers growing maize, sorghum, millet, sugarcane, cowpea and certain vegetable crops. These farmers have only limited access to information, tools, technologies and management practices to forecast, recognize and manage an infestation of FAW in their fields. Once their fields are infested, they neither have the financial means nor a management strategy to combat it.

Although there are some management practices that can be quickly adapted to the conditions in Africa, the Near East, and Asia, such management techniques need to be tested and validated under local diverse farming systems and landscapes. Some short-term research needs to be conducted to rapidly validate additional potential and unproven management practices. Communication and training campaigns must be scaled up to help farmers and their organizations learn about FAW biology and ecology and how to manage it. Decision-makers must be aware of the potential threat and have access to information and advice regarding effective and sustainable policies and programmes. While it is attractive for farmers to receive handouts of large purchase of pesticides from their governments, this approach is not always a sustainable response.

Recognizing the significance of the threat posed by FAW, several countries in Africa (and similarly in recently affected countries in Asia) have already begun programmes, but mostly by providing pesticides to farmers. These are expensive emergency responses that are mostly not economic, lead to development of resistances and have long-term risks to humans and the environment and are ultimately not sustainable. The Government of Zambia, for instance, allocated USD 3 million to smallholder maize farmers in 2017 for pesticides, including provision for replanting 90 000 affected hectares. Similarly, the Government of Ghana provided USD 4 million as an emergency measure to procure plant protection products. The Government of Rwanda mobilized the armed forces to engage in mechanical control, crushing egg masses, and treating infested fields.

It must be noted that before the introduction of FAW, most smallholder farmers in Africa in particular, but also Asia, did not use pesticides in their maize production. FAO and partners have made a lot of efforts to educate and discourage the emergency responses based largely on the purchase and distribution of highly hazardous pesticides (HPPs) to farmers even without any training on appropriate use and management for the control of FAW.

It is not only unsustainable – it is highly damaging in the long run to human health and the environment. In particular, it is detrimental to biodiversity and kills natural enemies of the FAW in the cropping system. The already known facts about FAW quickly developing resistance to many active substances also puts Africa and Asia on an unsustainable and dangerous risk of the “pesticide treadmill”. Therefore, a full range of science-based solutions will have to be tested and evaluated against efficacy and cost-benefit analyses in order to support producers to adopt and scale up different options, such as agronomic practices, biological control, biopesticides use, biotechnology solutions, and less toxic chemicals etc. It is critical that information on efficacy, risks and benefits is made clearly available. In parallel, a discussion at policy and legislative level will create an enabling environment for the provision of tools and knowledge to support the sustainable management of FAW.

1.2 Fall armyworm – the insect pest

The fall armyworm (FAW) *Spodoptera frugiperda* (J. E. Smith) (*Lepidoptera: Noctuidae*), is a moth (adult stage) with a damaging phytophagous stage called the larva or caterpillar, known to feed on several different crop species including maize (which it prefers), sorghum, millet, sugarcane, vegetable crops and cotton. FAW is a transboundary pest and the adult moths are able to fly over 100 km in a single night. The insect is native to the tropical and subtropical regions of the Americas, where it has been known for over a century as an economic pest of maize. It remained in that part of the world until it was first detected in West and Central Africa in early 2016. It is unclear how the cross into Africa occurred, but DNA barcoding evidence has shown that the haplotype present in Africa originated from Florida and the Caribbean.

The life cycle of FAW in Latin America (FAO, 2017) is completed in about 30 days (at a daily temperature of ~28°C) during the warm summer months but may extend to 60–90 days in cooler temperatures. The FAW life cycle includes egg, six growth stages of caterpillar development (instars), pupa and moth. The life cycle of FAW does not have the ability to diapause (a biological resting period), where conditions remain suitable (as in many sub-Saharan countries where there is no winter), and the populations are endemic. In non-endemic areas, migratory FAW arrive when environmental conditions allow and may have as few as one generation before they become locally extinct.

The number of eggs per mass varies considerably but is often 100 to 200, and total egg production per female averages about 1 500 with a maximum of over 2 000. Duration of the egg stage is only 2 to 3 days during the warm summer months. FAW typically has six larval instars. Larvae tend to conceal themselves during the brightest time of the day. Duration of the larval stage is 14–30 days depending on the prevailing temperature from warm to cooler. The larva pupates in the soil at a depth of 2 to 8 cm. It constructs a loose cocoon by tying together particles of soil with silk around itself. Pupation could also happen when the larva only finds some debris but no soil. The

pupal stage lasts for 8 to 9 days, then an adult moth emerges. Adults are either male or female with distinct forewings coloration respectively and are nocturnal. After a preoviposition period of 3 to 4 days, the female moth normally deposits most of her eggs during the first 4 to 5 days of life, but some oviposition occurs for up to 3 weeks. Duration of adult life is about 10 days, with a range of about 7–21 days.

FAW can feed on over 80 different crop species, making it one of the most polyphagous and damaging crop pests. The larvae consume the leaves, creating holes and ragged leaf edges. Feeding through the maize whorl can cause a line of identical “shot” holes, when the leaf unfurls. During the maize vegetative phase, constant feeding results in skeletonized leaves and heavily windowed whorls loaded with larval frass. At maize reproductive and maturity stages, the larvae also feed on the tassels, burrow into the cobs, feeding on the kernels and potentially cause a complete loss of maize stands. FAW is known to cause significant damage to economically important cultivated grasses including maize, sorghum, sugar cane, but also to vegetables and cotton.

1.3 The preferred host of fall armyworm – maize

As previously highlighted, FAW is polyphagous and feeds on crop species, including sorghum, wheat, sugarcane, millets, cotton and vegetables but primarily maize for which it has a preference.

The global importance of FAW is related to the importance of maize worldwide. This is particularly so for hundreds of millions of farmers and others in the maize value chain in developing countries, including in Africa and Asia, whose food security and livelihoods depend on it both as a staple food and a cash crop. It is the most produced cereal worldwide. In Africa alone, more than 300 million people depend on maize as their main food crop. Maize is also very important as feed for livestock.

Maize happens to originate from the same region as FAW. It originated from Mexico, where it was domesticated from its wild relative thousands of years ago. It then spread widely in Latin America, the Caribbean, Northern America, and from there to Europe through explorers and traders, then to Asia and Africa. The spread was through deliberate introductions because of its ease of cultivation, high energy value for both human and livestock, and its industrial uses. Its wide climatic adaptability and availability of varieties for different climatic regions through concerted breeding efforts were also critical to it being the crop of the world.

Maize production in Africa is very low comparatively. Its production is besieged by several threats such as pathogens (fungi, viruses, bacterial), weeds, nematodes, insect pests, low quality seed, no or low levels of mechanization, lack of good post-harvest management, and drought etc. Yield losses can be sometimes up to 100 percent, thereby dramatically affecting the lives of farmers, consumers and the food security of these countries.

In Africa, maize is mostly produced for consumption in different forms, but mostly as dried harvested grains milled into flour for making different kinds of meals. Excess of family consumption needs are usually sold at very low prices for consumption in urban cities, or eventually for other uses such as livestock feed and the brewery industry.

In Asia, maize is important as a livestock feed and a staple food, as well as a raw material for starches and sugars used in food processing and other industries. The crop's importance has continued to grow due to the increasing and competing demands in the three areas: food, feed, and industry. Unlike Africa, most of the maize production is used as livestock feed compared to the amount consumed directly as food.

1.4 Scope of the action

The three-year Global Action (GA 2020 - 2022) is the key instrument proposed by FAO to have a radical and direct impact on the FAW threat. It is a proposal for a massive scale-up of activities building on the major achievements and lessons learned from the FAO five-year programme of action developed and started in 2018. FAW has quickly spread to many countries in Asia, the Near East and additional countries in Africa since the development of the FAO five-year action programme, and the risk of further introduction and spread and impact on the global food security and livelihoods has increased. The Global Action will catalyse FAW-affected countries' capacity to react and protect food production from threats that new emerging transboundary pests represent.

The Action needs **500 million USD** to:

- (1) Establish and implement a global coordination system that will connect the national FAW response efforts directly to global, political-level support.
- (2) Massively scale-up capacity development on integrated management of FAW in affected countries in Africa, Asia and the Near East, to sustainably manage FAW and reduce crop yield losses.
- (3) Ensure the risk of further introduction and spread to new areas is reduced.

In October 2018, at a FAW research for development (R4D) meeting held in Addis Ababa, Ethiopia, the global leadership of FAO in coordinating all partnership research and development efforts towards the sustainable management of FAW in the new countries and regions was reconfirmed. The meeting identified gaps and corresponding recommended actions in all the different technical areas of the Framework for Partnership on FAW sustainable management effort. Through this Action, FAO will coordinate and lead the global collaboration with research institutions, academia, public and private sector to address these gaps and develop integrated pest management (IPM) strategies for sustainable management of FAW in Africa, Asia, and the Near East.

The Global Action will strengthen national governments' capacity to take a coordinated approach to managing FAW. Farmers need immediate information and capacity development, so that they can respond to FAW infestations in their farms and reduce yield losses.

The Action will be implemented in three regions: Africa, Near East and Asia with a special focus on the countries of the Hand-in-Hand Initiative¹. The selection of countries is based on three main criteria:

1. Level of infestation for radical work on IPM capacity development;
2. Risk of further FAW introduction and spread for immediate prevention action to apply phytosanitary measures; and
3. "Matchmaking" between countries with the highest poverty and hunger rates and those countries most able to offer support in line with the Hand-in-Hand Initiative.

The Global Action approach will facilitate the flow and use of information, knowledge, products and services.

AFRICA

Pest situation	*Countries	Threat	Proposed actions
Widely present	1. Nigeria 2. Tanzania 3. Kenya 4. Mozambique 5. Zambia 6. Zimbabwe 7. Malawi 8. Uganda 9. Burkina Faso 10. Mali 11. Madagascar 12. Niger 13. Guinea-Bissau 14. Ethiopia 15. D.R. Congo	Immediate threat to food security	Immediate: Capacity development in early warning system and monitoring and IPM
Present	16. Angola 17. South Sudan 18. Burundi 19. C. African Republic 20. Chad 21. Somalia 22. Comoros 23. Djibouti 24. Rwanda 25. Sao Tome e Principe 26. Eswatini 27. South Africa	Threat to food security	Short term: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.
Not known to be present	1. Lesotho		Prevent introduction and spread: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.

¹ <http://www.fao.org/3/nb850en/nb850en.pdf>

ASIA–PACIFIC

Infestation situation	Countries	Threat	Proposed actions
Widely present	1. Afghanistan 2. Bangladesh 3. Sri Lanka 4. China 5. India	6. Viet Nam 7. Thailand 8. Myanmar 9. Nepal	Immediate: Capacity development in early warning system and monitoring and IPM
Present	10. Cambodia 11. Indonesia 12. Philippines 13. Lao 14. Australia	Threat to food security	Short term: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.
Not known to be present	1. DPR Korea 2. Iran 3. Mongolia 4. Papua New Guinea 5. Pakistan	6. Fiji 7. New Caledonia 8. Vanuatu 9. New Zealand	Prevent introduction and spread: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.

Near East

Infestation situation	Countries	Threat	Proposed actions
Widely present	2 Yemen 3 Sudan 4 Egypt	Immediate threat to food security	Immediate: Capacity development in early warning system and monitoring and IPM
Present	5 Mauritania	Threat to food security	Short term: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.
Not known to be present	1. Morocco 2. Algeria 3. Iraq 4. Jordan 5. Lebanon	6. Libya 7. Oman 8. Saudi Arabia 9. Syrian Arab Republic 10. Tunisia	Prevent introduction and spread: Capacity development in early warning system and monitoring and IPM and improve phytosanitary measures to prevent further introduction and spread.

Table 1: Proposed actions in target countries according to FAW infestation

*Priority countries for the Hand-in-Hand initiative are highlighted in red

2. Rationale

2.1 Distribution of FAW

FAW is a transboundary pest that is now almost cosmopolitan in distribution. It was first detected in Central and Western Africa in early 2016 (Benin, Nigeria, São Tome and Principe, and Togo), and within two years, it was reported to have invaded all sub-Saharan Africa, except Lesotho. The pest has now been confirmed also in Asian countries including: India, Bangladesh, Sri Lanka, Thailand, Myanmar, China (including the Province of Taiwan), Indonesia, Philippines, Laos, Malaysia, Viet Nam, Cambodia, the Republic of Korea, Japan, and in the Near East, Sudan, Yemen and Egypt.

The ability to spread fast into new areas, multiply and establish economic pest population levels quickly makes FAW a huge threat to food security and the rural livelihoods of millions in places where it has invaded and many more millions in its path. Before being first detected in Africa in 2016, FAW was already known to be a serious economic pest of maize especially, in tropical and sub-tropical areas of the western hemisphere for many decades. FAW crossing over the Atlantic Ocean to the eastern hemisphere, the rapid spread through countries and continents quickly changed its status to a global pest with huge impacts and implications for the world. The rate of spread and places of establishment in the new hemisphere, in addition to its wide host-range indicate that the risk of spread to more places within countries, to new countries and regions in the eastern hemisphere (including Europe and Oceania) is high. Except for a coordinated and committed, large global intervention effort, FAW has proven that it is impossible to achieve the 2030 Agenda for Sustainable Development Goals (SDGs). Already, the current distribution in Africa, Asia and the Near East constitutes a threat to food security and livelihoods of global magnitude.

2.2 Impacts of the FAW

FAW is a damaging pest of economic importance. Its direct impact is mainly economic through yield reduction of the crops it attacks, particularly maize, and other cereal crops. In addition, there are indirect impacts which occur as a result of the yield loss in both quantity and quality, and control actions in terms of time and costs. They include reduced food and income (potentially increasing food insecurity, malnutrition, and poverty), as well as broader economic, social, health and environmental impacts.

The arrival and spread of FAW in Africa justifiably caused immediate panic in African countries, many of which were already going through one or more crises that limit food production and availability. Based on the known behaviour of FAW in its native lands in the Americas, the early experiences in Africa, and the fact that the pest is now becoming endemic in sub-Saharan Africa due to conditions favourable for survival all year round, the **threat on food security and rural livelihoods** is huge. Also, the benefits of natural suppression by natural enemies that the pest had co-evolved with in the Americas might not be of immediate realization in the pest's new ecosystems. In a survey study (CABI, 2017), estimated losses reported from 12 African countries

ranged from 8.3 to 20.6 million tonnes of maize per annum (equivalent of USD 2 481 – 6 187 billion) (Day *et al.*, 2017). In similar surveys (CABI, 2018), the average maize losses reported by farmers in Ghana was 26.6 percent and in Zambia 35 percent, equivalents of USD 177 million and USD 159 million in Ghana and Zambia, respectively, much lower compared to the 2017 estimates (Rwomushana *et al.*, 2018), but nevertheless substantial.

Following the introduction of FAW to many African countries, some studies have attempted to estimate actual yield loss at field/farm level using farmer surveys (questionnaire, focus groups). Results include up to 77 percent yield loss in maize in Zambia (FAO, 2017); 22 percent in maize in Mozambique (FAO, 2017); 32 percent and 47 percent in maize in Ethiopia and Kenya respectively (Kumela *et al.*; 2018);-assessed through field trials were 11–18 percent in maize in Ethiopia (Kassie, 2018), and 6.9–13.9 percent in maize in Zimbabwe (Baudron *et al.*; 2018). Farmer surveys and field trial data can be extrapolated to national level.

Actual yield losses in poor-resourced farmers' fields already with factors that inherently keep yields low are likely to be high for maize under any heavy infestation levels. Maize is attacked by FAW at virtually all the developmental stages of the maize thereby causing severe losses when the whorl is destroyed. At the later development stages the larvae also can feed on the tassels, burrow into the cobs and destroy the kernels, as well as expose the cob to infection by microorganisms including the mycotoxin (e.g. aflatoxin) producing fungi. Such cobs are 100 percent lost as they become non-harvestable. Also, it adds to the mycotoxin threat to food security and international trade. This, in addition to the justifiable new measures in place for the movement and export of crops that are host plants for FAW from developing countries with confirmed presence of FAW, will come under particularly new scrutiny from importing countries that are free of the pest.

The potential impact on the budding private seed sector in many of these countries and, therefore, the further drag on attainment of the 2030 Agenda for Sustainable Development Goals, particularly of zero hunger, no poverty, is huge. Damage to maize seed production fields does not only affect the availability of seed to farmers in the following growing seasons but also becomes an additional barrier to the economic viability of the emerging private seed sector.

A typical illustration of the impact of FAW on international trade is that, following establishment of FAW in Africa, the EU instigated emergency measures requiring strict phytosanitary controls in exporting countries to reduce the risk of the pest reaching Europe, and as such two consignments in 2017, and seventeen in 2018 from Africa containing FAW were intercepted in Europe 2018 (Rwomushana *et al.*, 2018). This confirms the risk of spread to Europe via trade (in addition to the risk of natural migration of the strong-flying moths). The incident also underscores the further potential socio-economic impact on the crop value chain by bringing down the prices that the farmers can receive for their harvest and therefore on their livelihoods.

Population migration to urban cities from rural agrarian communities is most likely due to the rapid spread and ability of FAW to cause crop damage and increase food insecurity and rural

poverty. This has the potential for cascading effects of increased food insecurity, poverty and pressure on the socio-economic systems of the countries.

In addition to the socio-economic and food security impacts of FAW, the introduction of FAW in Africa and Asia caused panic among farmers and governments due to the destructive nature of the pest and insufficient knowledge of management practices to reduce yield loss. Some governments in Africa handed out pesticides to farmers without adequate knowledge of their safe use. The cost and the potential risk to health and environmental effects of indiscriminate, and unguided use of synthetic pesticides (including some highly hazardous pesticides (HHP)) significantly increase the potential impacts of FAW in Africa, Asia and the Near East. This highlights the potential for negative human and environmental health impacts. (Huesing *et al.* 2018) noted that this action can result in critical problems including:

- Substantial environmental and human health issues, arising from both the initial application of hazardous chemicals and continued exposure to pesticide residues on consumed produce or in the production environment.
- Damage to populations of natural enemies of FAW and other major pests in the cropping systems, further impeding sustainable management of FAW and these other pests.
- High risk of pesticide exposure particularly for women and children at farm level, as women mostly manage smallholder farming operations such as pesticide application while simultaneously caring for infants in many parts of the developing world, as in most African countries.

2.3 Problem analysis and the theory of change

The ability to spread fast, multiply quickly to establish economic pest population levels and destructively feed on a wide range of crops makes FAW a unique threat to food security and livelihoods of hundreds of millions of people in Africa, Asia and the Near East, where the FAW has invaded. This has huge implications for global food security, poverty reduction, resilience to climate change, and human and environmental health.

The Problem: Maize (but also other crops) is being attacked by FAW currently in 44 countries – 27 in sub-Saharan Africa, 13 in Asia, and four in the Near East, and in another 21 countries: one in sub-Saharan Africa, and ten each in Asia and the Near East (see Table 1). The rapid spread and extent of infestation by FAW is causing moderate to severe yield losses in the 44 countries where FAW has been confirmed. The rate of misuse (including overuse) of pesticides (some of which belong to the HHP group) in most of these countries has dramatically increased as farmers and governments panic to control the pest, which is inherently difficult to kill by pesticide sprays because of its behaviour on the plant and development of resistance – leading to repeated use and overdose sprays. These two linked problems have the potential effects of increased food insecurity, poverty, human and environmental health problems, the loss of biodiversity, and reduced resilience to climate change.

In addition to the 27 countries in Africa, Asia and the Near East that may be infested already or could be infested within the next year or two, other new areas could also become infested. The introduction and spread to new areas could be via international trade and or the unique transboundary nature and ability of FAW moth to fly long distances and to adapt to a wide range of climates.

Infestations and the continuous spread of FAW is aided by some key deficiencies in most of the countries in Africa and Asia-Pacific. They include:

- lack of, or inadequate, inclusive coordination among key stakeholders;
- lack of effective pest monitoring and early warning systems;
- lack or inadequate knowledge on FAW sustainable management;
- poor or lack of phytosanitary measures and implementation; and
- poor agricultural extension and farmer communication systems.

2.4 The theory of change

There are numerous technical, coordination and political challenges impairing prevention and control of FAW in Africa, Asia and the Near East (figure 2) requiring a radical and transformational global intervention such as the USD 500 million, three-year Global Action Programme. The cost of no action or haphazard support/action will be far more costly. The Global Action Programme seeks to remove these technical, coordination and political barriers to enable progress towards the sustainable management of FAW. A non-exhaustive list of these barriers at technical, coordination and political level that must be removed to change the current situation and lead to new outcomes is shown in the theory of change schema (figure 2) in the second column “Barriers to FAW management”.

The Global Action Programme for sustainable management of FAW is designed around the elimination of these barriers (see figure 2):

- Massive scale up of capacity development in each of the target beneficiary countries on IPM of FAW. This includes, in addition to FAO and partners in-country capacity development, building of strategic partnerships with research institutions such as the CGIAR centres, academia, public and private sectors to develop innovative ecosystem-based IPM technologies for sustainable management of FAW;
- Policy review and coordination, standard setting, and surveillance, risk assessment and phytosanitary measures development and implementation to reduce the risk of further FAW spread; and
- Establish and implement a global coordination system that will connect the national FAW response efforts directly to global political level support.

This Global Action is expected to produce several outputs (see Outcomes, Outputs and Planned Activities) leading to transformational immediate outcomes and paradigm shift contributing towards impact socio-economic and environmental levels (figure 2).

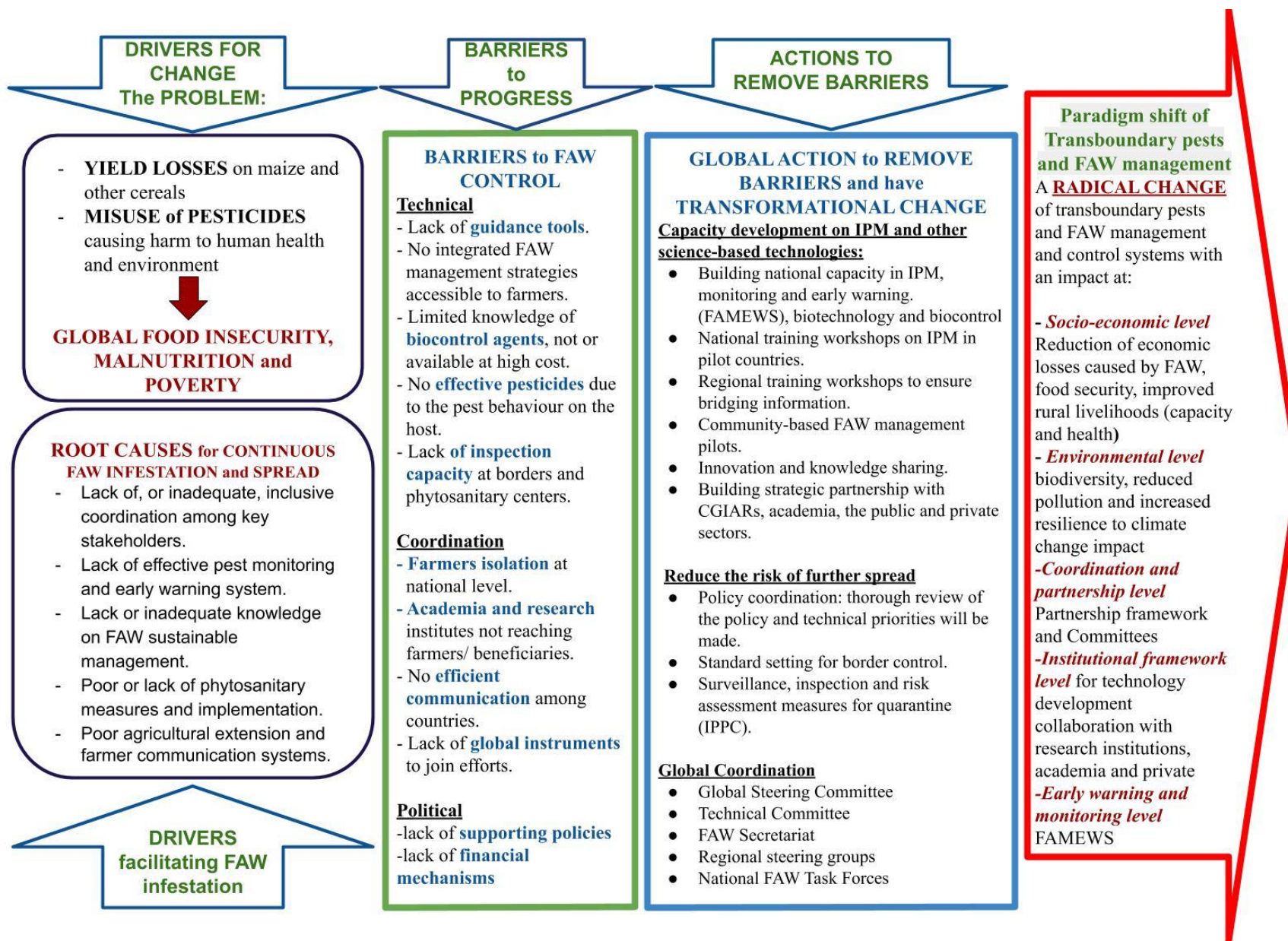


Figure 2: Theory of change of the Global Action for FAW Control

3. Basis of the Programme

The FAW Global Action Programme is a three-year initiative that seeks to dramatically reduce the harmful effects of FAW on agriculture production. At the end of the three-years interventions, countries will have developed capacity in sustainable management of FAW, considerably reduced yield losses and the risk of further introduction and spread to new areas.

The Global Action Programme builds on the work and lessons learned by the FAO-FAW Strategic Framework Programme started in 2018. This framework established a partnership for the sustainable management of the FAW in Africa, the Near East and Asia dealing with FAW management and testing ecosystem-friendly pest management practices, monitoring and early warning systems, innovations, enabling policies and coordination mechanisms.

The three-year Global Action Programme aims at scaling up FAW management efforts at global level to reach 65 target countries (Table 1) comprising 44 countries: 27 in sub-Saharan Africa, 13 in Asia, and four in the Near East where FAW presence is confirmed. Another 21 countries: one in sub-Saharan Africa, ten each in Asia-Pacific and the Near East potentially infested. The proposed intervention will remove barriers to sustainable management of FAW in the affected countries and its introduction into other regions.

The *modus operandi* will be at national, regional and global level ensuring groundwork with beneficiaries, smallholder farmers, and at the same time decision processes on supportive and enabling policies to scale up IPM, early warning, monitoring and phytosanitary measures.

The sound technical level is ensured by the already established partnership framework, and it will be further strengthened, allowing research institutes as the CGIAR centres, academia and the private sector to contribute and deliver innovative technologies to benefit farmers.

The transformational approach of the Global Action for FAW Control calls for innovative global coordination and action. A global steering committee chaired by FAO's Director-General will oversee the coordination and implementation of the activities and connect the national groundwork to the global political level. A technical committee will advise the global steering committee and a FAW Secretariat, hosted by the Division of Plant Production and Protection (AGP) of FAO in coordination with the IPPC Secretariat, will be responsible for the day-to-day work.

The Global Action will strengthen national governments' capacity to assist farmers for an immediate intervention. It will design and implement appropriate holistic approaches considering all solutions relevant for diverse agroecologies, cropping systems, landscapes, value-chains and socio-economic contexts of the farming communities in Africa, the Near East and Asia. Capacity development on IPM and community-based pilots will use innovations and technologies

proposed by research partners in order to benefit the farmers directly and reduce yield losses in an eco-friendly manner.

FAO Comparative advantages (related work and experience)

FAO is already supporting members through impact assessments, developing monitoring and early warning systems and response strategies. It has implemented several projects in the past regarding transboundary pests, locust and pesticide management. In doing so, subregional and country offices have always played a crucial role in coordinating the work.

FAO maintains strong collaboration networks with international partners from the public and private sectors, civil society, farmer organizations, to exchange information and knowledge on pest and pesticide management worldwide. In the case of FAW, FAO is, amongst others, working together with CGIAR Centres and other advanced research organizations to coordinate research agendas, avoiding silos but also duplication of work.

FAO's staff members – both at Headquarters and in the field via the decentralized offices – have the best technical knowledge in pest management, early warning and monitoring of pests, and in international governmental collaboration. The Organization can respond quickly to the needs of members, also through emergency interventions and by adapting field-tested strategies to various contexts.

Farmer Field Schools (FFS) will play a central role in informing farmers about FAW management, as they are an important means of dissemination. FAO pioneered the FFS approach in 1998 and since then, FFSs have been established in over 90 countries with a strong network. There is no doubt that due to its long-time experience, FAO is in the best position and more than well prepared to integrate FAW management in FFS curricula.

With more than 50 years of experience, FAO has substantial internationally-recognized technical expertise on transboundary pest management and pesticides. Moreover, FAO is a strong partner of state and non-state actors alike, such as national governments, ministries, the private sector, universities and research centres. This includes support to the development and implementation of national policies and pest management programmes.

FAO provides support to the implementation of related guidance documents, such as the code of conduct on pesticides management and the pesticide registration toolkit. With its broad expertise, neutral position, strong partnership networks and support to the implementation of the instruments mentioned above, FAO is well positioned to successfully bring all stakeholders together to successfully manage the outbreak of the FAW in Africa, the Near East and Asia-Pacific. Specifically, this project will build on the following strengths:

FAO is a neutral forum and convening body for bringing together interested parties, such as national and county government departments, the private sector, international and regional organizations, research institutes, technical experts and donors, and achieving consensus on the way forward, based on the various experiences, lessons learned, current situation and future needs. FAO will coordinate the global support to countries for managing the FAW outbreak and to mitigate the impact in the countries already affected and to contain further introduction and spread.

FAO works at a global level to provide services and products (FFS guide & training, pesticide policy advice and standards, FAMEWS and FAW risk systems). Across Africa and Asia-Pacific, FAO works closely with regional organizations via the FAO Regional Offices, at subregional level with the RECs, and at national level, directly helping members develop and implement their programmes and policies via the FAO Representation in each country. FAO works closely with the Inter-African Phytosanitary Council, the North East Plant Protection Organization, and the Asia and Pacific Plant Protection Commission.

FAO has tremendous technical expertise on crop pests and diseases management and pesticide risk reduction, within AGP. The Division has expertise on management and control of emerging pests and diseases that include FAW. AGP is already providing substantial support on sustainable FAW management to countries via:

- Training on local production of biocontrol agents.
- The provision of information material (available in all UN languages and Portuguese).
- The development of [FAMEWS](#), the monitoring and early warning system, that also provides free advice for farmers.
- Organization of a [consultative meeting on FAW in Asia](#), Bangkok, Thailand, 20–22 March 2019.
- [Regional workshop on sustainable FAW management in Africa and the Near East](#), Cabo Verde, Africa, 21–24 October 2019.
- [Regional workshop on sustainable FAW management in Asia](#), Kuming City, Yunnan Province, China, 11–15 November 2019.

The International Plant Protection Convention (IPPC) is the sole global treaty recognized by the World Trade Organization Agreement on Sanitary and Phytosanitary Measures (WTO SPS Agreement) as standards setting and implementation body for plant health. The IPPC aims to secure coordinated, effective action to prevent and to control the introduction and spread of pests of plants and plant products in order to preserve food security, to protect biodiversity and to facilitate trade. The Convention provides a framework and a forum for international cooperation, harmonization and technical exchange between contracting parties.

Organization of the IPPC:

- The number of contracting party signatories to the Convention as of March 2020 is 184.
- Each contracting party should establish a National Plant Protection Organization (NPPO) and nominate an official IPPC contact point.
- Ten (10) Regional Plant Protection Organizations (RPPOs) have been established to coordinate NPPOs in various regions of the world.
- The IPPC Secretariat liaises with over 35 international and regional organizations to help build regional and national capacities.
- The IPPC Secretariat is provided by FAO.

Since its establishment, the IPPC Secretariat has helped ensure food security and contributed to protecting biodiversity, as well as provided the framework for facilitating safe trade. The major work area and achievement for the IPPC Secretariat are as follows:

- **Standard setting:** Over 100 ISPMs have been adopted in 1993–2018 within which 55 percent were tech-related and 45 percent were trade-related.
- **Implementation and capacity development:** Without proper implementation and capacity development to enable the Convention and its standards to be effectively implemented by contracting parties, setting standards is worthless. The IPPC Secretariat implemented its Phytosanitary Capacity Evaluation (PCE) in over 60 contracting parties since 2000 to help build capacity in NPPOs to carry out their functions. Over 30 guides and training materials have been developed to provide accurate and easy understanding, best practices and lessons learned to NPPOs. Phytosanitary technologies related to phytosanitary issues such as early-detection, inspection, diagnostics, surveillance, pest reports and eradication are being implemented in pilot countries to find an integrated best solution or practise to maintain a Pest Free Area (PFA).
- **Communication and international cooperation:** This core activity is an essential tool aimed at ensuring that the potential for serious negative impacts from introduced pests worldwide is understood and that plant health is included in the policy considerations of relevant intergovernmental and nongovernmental organizations.

FAO is already successfully coordinating FAO's programme on sustainable management of FAW, bringing together fast-tracked emergency response, all technical areas, communications and training, with FAO's Headquarters, the Regional Offices, the Subregional Offices, National Offices, Resilience Hubs, NGOs and research institutes into one coherent, consistent programme (see figure 3).

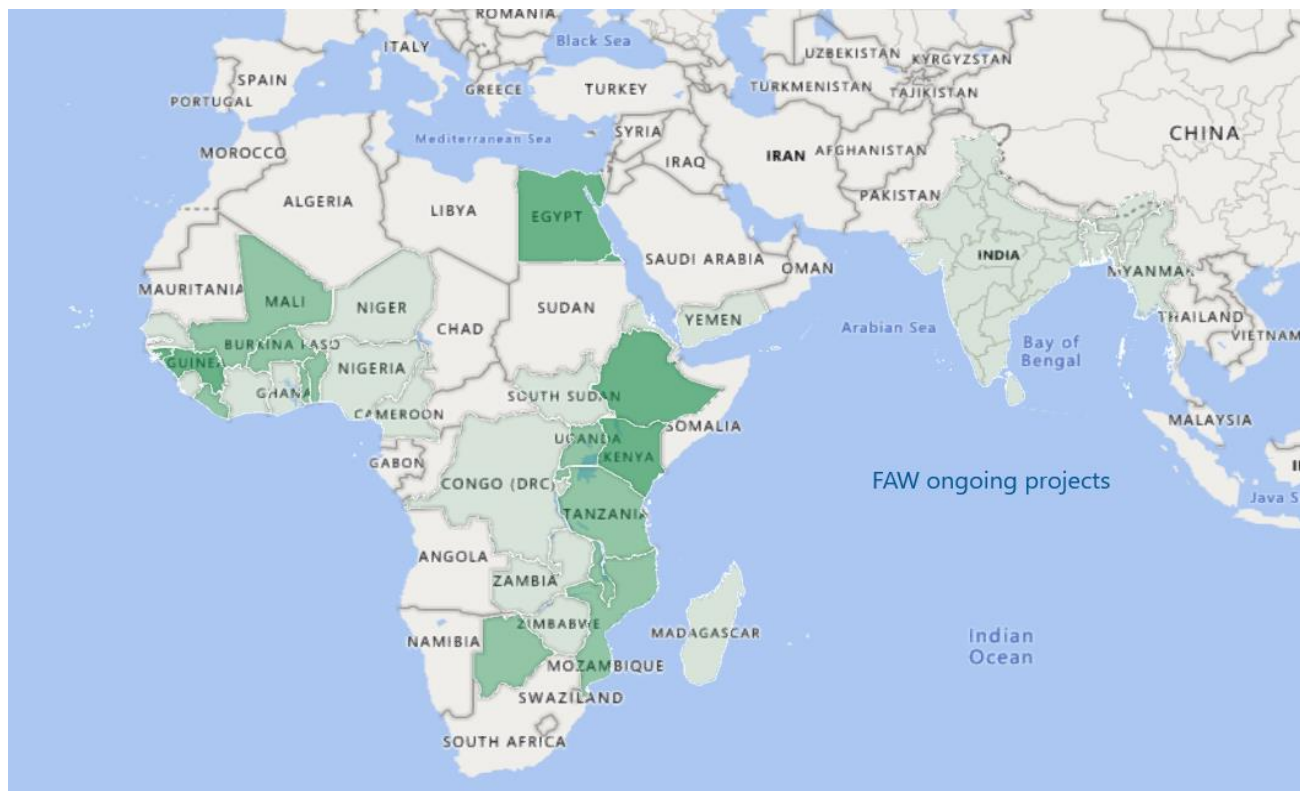


Figure 3: Countries with ongoing FAW projects, supported by AGP

Stakeholders and stakeholder engagement

Since the introduction and spread of FAW in Africa, FAO has been working with many different stakeholders and partners (table 2). Indeed, after a stakeholder consultative meeting in Nairobi, Kenya in April 2017, FAO developed the framework for partnership. In this scaled up Global Action, further stakeholder mapping will be done and included in the stakeholder engagement matrix (table 2) to ensure an inclusive partnership and effective stakeholder engagement.

The activities of the proposed Global Action for FAW Control will be carried out in close collaboration with different partners, such as but not limited to national governments, ECOWAS/CILSS, AGRA, APPPC, CAAS, COMESA, FEWSNET, CABI, CGIAR Centres (CIMMYT, IITA, ICRAF, etc.), ICIPE, SADC/CCARDESA, ASARECA, CORAF, AUC, NIBIO, MARA, IPPPC, Farmers' Organizations, National Agricultural Universities, civil society and the private sector.

Following the arrival of FAW in Africa, FAO has led or participated in many meetings to identify and engage with stakeholders as outlined in the following table (table 2):

Stakeholder Name	Stakeholder Type	Stakeholder profile	Consultation Methodology	Consultation Findings
African Union	Indirect Beneficiary	Regional Government Institution/body	<p>Several meetings have been conducted to identify and meet stakeholders:</p> <ul style="list-style-type: none"> - Consultative meeting (Harare, Zimbabwe, 14–16 February 2017) - Stakeholders consultation meeting on “Fall armyworm in Africa: Status and strategy for effective management” (Nairobi, Kenya, 27–28 April 2017) - Consultation meeting with partners (Accra, Ghana, 17 July 2017) - Global FAW experts meeting (18–20 July 2017, Accra Ghana) - Farmer Field Schools FAW curriculum development workshop (Accra, Ghana, 21–25 July 2017) - FAW training of trainers (Addis Ababa, Ethiopia, 24–28 July 2017) - FAW training of trainers (Abuja, Nigeria, 5–9 September 2017) 	<p>FAO has developed a <i>Framework for partnership</i> that brings together all partners into a coordinated and coherent structure.</p> <p>To strengthen global coordination, FAO has facilitated the establishment of twelve Technical Working Groups (TWG), which became functional during the second half of 2017.</p> <p>In addition to the technical partnership with various stakeholders, the establishment of a larger consortium of resource partners around a larger FAW fund is proposed to support the implementation of the framework programme of FAO for the sustainable management of FAW.</p>
Consultative Group for Agricultural Research (CGIAR) CYMMIT, ICRISAT, IITA	Indirect Beneficiary	Research Institute		
International Centre of Insect Physiology and Ecology (ICIPE)	Indirect Beneficiary	Research Institute		
EMBRAPA	Indirect Beneficiary	Research and Development Agency		
Centre for Agriculture and Biosciences International (CABI)	Indirect Beneficiary	Research Institute		

			<ul style="list-style-type: none"> - Farmer Field School Training (Abuja, Nigeria, 10–15 September 2017) - Subregional workshop (Entebbe, Uganda, 18–20 September 2017) - Consultative meeting on FAW in Asia (Bangkok, Thailand, March 2019) - Multi-stakeholder regional workshop on innovations for smallholder farmers for sustainable management of fall armyworm in Africa and the Near East (Praia, Cabo Verde 21–24 October 2019) - Regional workshop on sustainable management of fall armyworm in Asia. (Kunming City, Yunnan Province, China, 11–15 November 2019). 	
Farmers/Farmers organizations	Direct Beneficiary	Local Community	Farmers and local communities were identified during a series of meetings and trainings and through already existing FFS training courses.	The outcome of the meetings and consultations was clearly that many farmers do not have the necessary support to identify and manage the FAW in their fields. They will greatly benefit from the global, coordinated effort to sustainably manage the FAW.

Table 2: Stakeholder engagement



Figure 4: FAO's response 2017-2019

All meetings and consultations were attended by representatives of national governments, subregional and regional bodies including AU, CGIAR Centres, other research and development agencies, the private sector, resource partners and civil society.

FAO has worked with members and many partners to develop the [Framework for Partnership](#). This Framework has been endorsed by all participating partners and provides the overarching framework for working in partnership in the proposed Global Action for FAW Control. .

Knowledge management and communication

Given the complexity of the serious threat that the FAW represents, collective global action is needed. Currently, the partnership comprises governmental and non-governmental stakeholders, public and non-public sector partners and a vast number of research centres. Stakeholders and actors need to be informed not only about the status of the project, but also about actions that have been taken, results, lessons learned and the further development and adaptation of the project. Within FAO's Programme for action on the sustainable management of the fall armyworm, the information and knowledge sharing are coordinated by the *Farmer Education and Communications Technical Working Group*, which brings together all communication partners.

Therefore, FAO together with its partners, is producing information and knowledge products and makes them easily available. Access to information and knowledge is considered the key element of the project. Technical extension leaflets targeting farmers and extension workers on FAW management decisions, specifically on identification, prevention, monitoring and direct control, are being finalized by FAO and CABI to be widely disseminated.

To date, FAO has developed significant communication and information products in the implementation of its Programme for Action:

- [Synthesis report from the fall armyworm expert meeting](#)
- [FAO programme for action: Sustainable management of the fall armyworm in Africa](#)
- Briefing notes on FAO's actions on FAW, including up-dated maps of distribution
- Development and publication of the [Farmer Field Schools guide for managing fall armyworm in Africa](#)
- Development and deployment of a mobile application for the [fall armyworm monitoring and early warning system](#) (FAMEWS)
- [Series of webinars](#) on FAMEWS
- Development of a Risk Model and Mapping for FAW
- FAW Guidance notes:
 1. [Fall armyworm: Pesticide risk reduction](#)
 2. [Fall armyworm scouting](#)
 3. [Fall armyworm trapping](#)
 4. [How to manage fall armyworm: A quick guide for smallholders](#)

5. [Fall armyworm early action policy guide](#)
6. [FAO's position on the use of genetically modified maize](#)
7. [Addressing the impact of COVID-19 on the Global Action for Fall Armyworm Control](#)

- Training videos (e.g. Programme of action against the fall armyworm in Africa, best practices for fall armyworm management in Africa).

However, a new communication plan will be developed to complete the action started, with the following objectives:

- raising awareness of the threat FAW poses to global food security and to the livelihoods of smallholder farmers;
- catalysing knowledge and action on integrated sustainable solutions and achieve continued support for the Global Action;
- communicating impact and advocate for change to strengthen and transform sustainable management and innovation approaches for FAW;
- making partnerships and cooperation efforts visible; and
- outreach based on the principle of leaving no one behind.

The target audience will be the general public (to raise public opinion), politicians and policy makers responsible for a decision-making processes, members and their governments (including FAO Representatives), actual and potential partners (including academia, research organizations, private sector and NGOs), rural areas and farmer organizations, civil society and finally global media.

Specific objectives are:

- **Visibility.** Enhance the visibility of cooperation efforts and advocate for change/innovative approach to mainstream global action.
- **Reporting for long-term impact.** Share knowledge build information and document progress on collective results and on integrated sustainable solutions to combat FAW.
- **Capacity development and programme support.** Promote the results of global action, support a participative exchange of information, and provide continual communication support.

The following table provides an overview on the tools and activities planned

Digital

TOOLS/PRODUCTS	DETAILS	ACTIVITY	TARGET AUDIENCE
Website	The purpose is to be a reliable source of information and provide dynamic information in a user-friendly way. It will convey specific, helpful information to users so that they can learn something new or understand the topic better	Regular updates to the FAW and IPPC websites	All

Social Media	The purpose is to share, interact, market (promote our work) and connect with users. It will raise awareness of the threat of FAW and the need for global action	Social media posts through corporate channels, where and when appropriate	All
Videos	The purpose is to create compelling and effective messages to connect with viewers. Videos can be testimonials, scene setters, human-centred documentaries and interviews	Different types of videos should be produced to reach a range of target audiences and convey messages; advised to produce videos for events and to communicate results	All
Podcasts and audiograms	This tool allows users more flexibility on how they can listen when compared with traditional print articles or websites when users must focus more attention on the task	Recordings/interviews on specific topics with engaging speakers should be developed over the course of the project duration, when appropriate	General public, partners, media

Media

TOOLS/PRODUCTS	DETAILS	ACTIVITY	TARGET AUDIENCE
Media advisories	The purpose is to provide details of upcoming events and create media interest	Developed on a need basis	Journalists
Press releases/news stories	The purpose is to create short, compelling news stories	Developed to communicate results or an impactful story, when appropriate	All
Op-eds	The purpose is to reflect a prominent expert's opinion about the subject and is usually published in a newspaper or magazine	Media interest is needed to publish it	Experts and partners
Interviews	The purpose is for journalists to collect information from decision-makers, experts, farmers and present them to their readers	Interviews with engaging speakers should be developed over the course of the project duration, when appropriate	All stakeholders

Print

TOOLS/PRODUCTS	DETAILS	ACTIVITY	TARGET AUDIENCE
Publications	The purpose is to communicate scientific work and can complement teaching and training	Developed to communicate important technical/policy information, when appropriate	All
Leaflets, brochures, flyers	The purpose is to provide a summary of publications, events, etc.	Developed as a complementary product, when needed	All

Progress reports	The purpose is to communicate progress	Developed as requested by donor/partners	Donors and partners
Scientific papers	The purpose is to share original research work	Developed when needed	Experts and partners

Once the priorities are defined and milestones identified, a detailed roadmap will be developed to strategically map communication activities to reach larger audiences and mainstream communications through recurring activities:

TOOLS/PRODUCTS	DETAILS	ACTIVITY	TARGET AUDIENCE
Fall armyworm website	The website will also be a repository of up-to-date information including recent: <ul style="list-style-type: none"> - news items - information materials and publications 	<i>Regular updates</i>	All
Social media	Posts to raise awareness on FAW, the app and the Global Action	<i>Schedule post in OCC's social media plan</i>	All

Provisions for feedback

Feedback is important to understand the effectiveness of communication products.

Metrics will be identified for the different products. For example:

TOOLS/PRODUCTS	METRICS
Video	Number of views, shares and comments
Flyer	Number of copies distributed, number of downloads
Media advisory	Number of views, media pick up
Webpage	Number of views, website traffic
Social media video	Number of views, likes, shares and comments Share of voice
Brochure	Number of copies distributed, number of downloads
Press release	Number of views, media pick up

4. The Action Framework

4.1 Goal

To combat FAW, a three-year Global Action (GA 2020 - 2022) is the key instrument proposed by FAO to have a radical and direct impact on the FAW threat. The new action programme seeks a massive scale up of activities to reach millions of affected and potentially affected farmers. The goal is to improve food security and the livelihoods of millions of smallholder farmers and reduce environmental pollution through the sustainable management of FAW.

4.2 Objectives

The main objectives are to:

- (1) Establish a global coordination network and regional and subregional collaboration platforms on the sustainable management of FAW.
- (2) Develop the national and community capacity of FAW affected countries on IPM to sustainably manage FAW and reduce crop yield losses.
- (3) Coordinate the development of improved policies, standards and measures to reduce the risk of further introduction and spread of FAW to non-affected areas and countries.

4.3 Expected outcomes

The expected outcomes of the Action include (see also Logical Framework in Annex I):

OUTCOME 1:

- **Global, regional, national coordination on fall armyworm sustainable management enhanced**

Indicator 1: A global coordination system with effective communication strategies for stakeholder engagement and productive partnerships, and regional collaboration for FAW sustainable management in place.

Activities

The outcome will be achieved by:

- A global coordination that will provide policy support and technical support, approve the workplan, oversee the implementation of the Global Action, and facilitate resource mobilization as well as coordination between global, regional and national activities.
- A global outreach campaign that will reinforce the coordination role. Information will be timely posted on the website.

OUTCOME 2:

- **Crop yield losses caused by FAW are reduced**

Indicator 1: Number of countries that have implemented IPM practices and other technologies and policies for the sustainable management of FAW

Indicator 2: Reduction in maize yield loss in target countries that have implemented IPM practices, technologies and policies for the sustainable management of FAW

Indicator 3: Number of policies, innovative technologies and guidance developed and disseminated to farmers

Activities

The outcome will be achieved through key activities:

- Awareness raising and developing and implementation of national action plans for FAW management, and developing policies for sustainable management of FAW;
- Establishing national monitoring and early warning systems, which includes scouting as the basis for IPM, and promoting regional and global cooperation and information sharing on monitoring;
- Developing and testing of ecosystem-based IPM technologies and practices adapted to different local scenarios; and
- Scaling up ecosystem-based IPM at regional level, and training and disseminating FAW IPM information through farmer field schools.

OUTCOME 3:

- **Risk of further introduction and spread of FAW to new areas reduced**

Indicator 1: Preventive measures in place in target countries (including regions that are not yet affected and new areas in affected countries)

Activities

The outcome will be achieved by:

- Developing guidance on prevention of further spread of FAW;
- Implementation of standards for inspection and surveillance through collaborative efforts with support from the International Plant Protection Convention (IPPC) Secretariat; and
- Regional and national training workshops and collaboration on prevention of FAW.

4.4 Implementation of the Global Action

The implementation of the activities identified by the Global Action is based on five key principles:

- 1. Awareness-raising.** Awareness will be raised among all partners and stakeholders at global, regional and national levels to inspire their active engagement in the Global Action. A complete range of disciplines and stakeholders will be involved in the activities.
- 2. Coordination.** The activities of the Global Action will be coordinated from global level through the Steering and Technical Committees, respectively, down to the national level based on the establishment of FAW National Task Forces. The global partnership on FAW sustainable management will be strengthened to bring together all partners into a coordinated and coherent structure, in which they can use their comparative advantages in

complimentary and synergistic ways, to maximize efficiency and effectiveness of the FAW response.

- 3. Technical Support.** Innovative approaches and integrating technologies including new digitalization tools, developed and available for area-specific strategies, and applied for monitoring and early warning; prevention and control; surveillance and diagnoses. Technical support will be guided by Technical Steering Committee and assisted by six Technical Working Groups (TWGs).
- 4. Resource Mobilization.** Funds will be mobilized from all relevant sources, national budgets, private sector, development partners, development banks and FAO contribution.
- 5. Communication.** Outreach strategies at all levels, dissemination of knowledge material to increase visibility and outreach will complement the global action. Technical information will be transferred to smallholder farmers.

4.5 Estimated budget

The three-year Global Action for FAW Control is estimated to require a total funding of USD 500 million, most of which will be secured at the national level (see table 3).

FAO will ensure the coordinating and bridging role and will provide some in-kind regular programme support to the initiative. Countries will be called to identify national budgets that would cover the FAW framework activities for three years at national level to scale up FAW management. In addition, relevant donor-funded projects will also be called upon to contribute to the Global Action.

The activities for FAW management and control will also scale up national and regional capacities for broad transboundary pest management.

Activity Group	Estimated budget (USD)
1. Global Coordination:	50 000 000
1.1 Steering Committee, Technical Committee, Regional and Subregional Committees, National Task Forces, and Secretariat	30 00 000
1.2 Outreach and Communication	20 000 000
2. Global Action:	450 000 000
2.1 Capacity development on integrated management of FAW (IPM)	

2.2 Community-based FAW management pilots 2.3 Innovation and knowledge sharing 2.4 Building of strategic partnerships with academia and the public and private sectors to develop IPM of FAW	400 000 000
3. Risk of further introduction and spread of FAW to new areas reduced Policy coordination; standard setting for border control; surveillance, inspection and risk assessment measures for quarantine	25 000 000
Total budget	USD 500 000 000

Table 3: Estimated budget for implementation of the three-year Global Action for FAW Control (2020 - 2022)

4.6 Sustainability and financing mechanism

The fall armyworm programme of action started in early 2018 with a total budget of USD 27 million and 63 projects funded internally by the FAO Technical Cooperation Programme (TCP) and one coordination project funded by the Norwegian Agency for Development Cooperation (NORAD).

The Global Action for FAW Control needs to reach 65 countries in Africa, Asia and the Near East, 44 of which are already experiencing the devastating effects of FAW to maize and other crops, and 21 yet to confirm the presence of the pest but well on its pathway. Infestations by the pest need to be managed to reduce yield losses, and further introduction and spread of the pest need to be prevented. To succeed, it aims at leveraging USD 500 million (Table 3) based on the following financing mechanisms:

National budget co-financing mechanisms

- National workplan and task force established
- Budget estimated and funds identified

FAO financing mechanisms

- UTF- Unilateral Trust fund (Govts funding)
- GCP-Donor/s funding (bi/multilateral funds)
- TCPs-FAO Technical Cooperation Program
- In-kind Regular Programme

Development partners

- NORAD
- USAID
- DIFID/UK
- GIZ

Development banks

- African Development Bank (AfDB)
- European Development Bank (EuDB)
- Asian Development bank (ADB)

Private sector

- Crop life
- International Biocontrol Manufacturers Association (IBMA)
- International Fertilizer Association (IFA)
- International Seed federation, Pesticide Action Network (PAN)
- Digital companies
- International Financing Institutions (IFI)

To ensure sustainability of the action, long-term results and impact, a key financial mechanism in the mix is the contributing beneficiary government funds devoted to FAW management based on national strategies of the intervention. It is crucial that donor agencies, development banks and development agencies cost-share the burden of the massive intervention at national levels, then scale it up to the global level.

In addition, once these funds are made available, it is envisaged that the private sector will be attracted to unlock resources at national and regional levels and build new initiatives for youth employment and capacity development in all technical aspects of the programme.

The African Development Bank (AfDB) has pledged USD 50 million to invest in the West African countries with high risk of poverty and food insecurity as part of a regional intervention ‘leaving no farmer behind’. China has invested USD 121 million in FAW management at the national level. Some African governments such as Ghana, Nigeria and Zambia have already invested USD 3, 6, and 4 million, respectively in their national FAW management strategies (Table 4). FAO is providing technical support to countries to develop their national FAW management strategy and budget

plans. It is hoped that every country will identify funds and make investments into their national FAW management strategies under this Global Action programme. This is a key mechanism for sustainability, since FAW can only be managed to reduce damage and yield losses once it is present, and unfortunately it cannot be eradicated. Introduction and spread could be prevented but this also requires sustained prevention measures and programmes in place.

As of November 22, 2019, the Global Action for FAW Control was only USD 282 million short of its target amount of USD 500 million to reach hundreds of millions of smallholder farmers in 65 countries in Africa, Asia and the Near East with sustainable FAW management, and protect many more countries in Europe and the Asia regions from the introduction of this invasive pest.

Through awareness raising, it is expected that other development banks will similarly invest in the Global Action fund.

The UN investment programmes through the UN Multi-Partner Trust Funds (MPTFs) and Joint Programmes (JPs) will also seek opportunities to unlock resources and open the door for long-term sustainability.

Donor	Funds available under the 5-year Programme Framework (USD)
FAO Financing Mechanisms	
FAO TCP	27 million
FAO Regular Programme	7 hundred
Ghana	3 million
Zambia	4 million
Nigeria	6 million
China	121 million
Development Partners	
NORAD	1.2 million/year
Development Banks	
African Development Bank (ECOWAS countries)	50 million (pledged)
TOTAL	218 million
To be mobilized	(282llion)

Table 4: FAO fall armyworm programme funding status (Nov 2019)

5. Implementation plan

5.1 Partnership and coordination

During the first major stakeholder consultation meeting on FAW in Africa “Status and Strategy for Effective FAW Management” 27–28 April 2017, in Nairobi, Kenya, FAO was confirmed as the global taskforce lead to coordinate response to FAW introduction and spread. In FAO, the coordinator of FAW is anchored within the Plant Production and Protection Division (AGP). As previously indicated, FAO has, since 2017, initiated and supported several national partnership projects, mostly funded through FAO internal funding mechanisms for members, and a few others through bilateral and multilateral donor funding to respond to the FAW infestations in Africa, and recently, Asia. The IPPC Secretariat is also based within FAO and plays an instrumental role in preventing the introduction and spread of pests of crop plants.

FAO works closely with its development and resource partners to maximize coordinated results and minimize duplication. Inspired and based on the important discussions and outcomes of the April 2017 consultation meeting in Nairobi, FAO – in cooperation with the FAW coordination technical working groups (TWGs), (see figure 5) – developed the [FAW Framework for Partnership for sustainable management of fall armyworm](#) that takes into account all FAW response interventions regardless of funding sources. The framework for partnership is understood to be a living document that should be reviewed and updated as needed by partners and other relevant stakeholders, e.g. in the light of the radical change in the FAW distribution landscape since 2018. However, the basic tenets of the partnership framework are established.

The framework seeks to bring together all partners into a coordinated and coherent structure, in which they can use their comparative advantages in complimentary and synergistic ways, to maximize efficiency and effectiveness of the FAW response. Key partners such as AGRA, USAID, DFID, the World Bank, the European Commission, IITA, CABI, and ICIPE attended a follow up meeting to discuss and review the proposed key components of the framework for coordinated FAW management, to identify who is doing what (and who is planning what) and to explore areas of collaboration including resources required to ensure a response to FAW at scale. FAO has very strong partnership networks in Africa, the Near East and Asia with ICIPE, National Research organizations, ICRISAT, CAAS, CIMMYT, CABI, IITA-TAAT and APPPC etc. NPPOs and RPPOs also being key partners for prevention of the FAW.

The framework for partnership for the sustainable management of the fall armyworm in Africa, the Near East and Asia is divided into six components:

1. Management of FAW: Farmer education and communication

Millions of smallholder farmers are facing FAW in their crops. They rapidly need the knowledge, recommendations, and tools available to make good management decisions in their fields. Awareness raising and mass communication campaigns are needed, farmer education through several fora (national extension programmes, plant health clinics, and

Farmer Field Schools (FFS)) must as rapidly as possible be implemented across the continent. Farmers, governments and extension systems also need sound technical and policy advice to avoid the use of HHPs and promote the use of safer alternatives.

2. Testing and validation of FAW management practices

Most of the smallholder maize, sorghum and millet farmers across Africa (as well as in Asia, and the Near East) do not use external inputs for pest management in their production. They mostly grow for household consumption and typically receive very low prices for any excess they sell. The options available to them for FAW management are often limited to locally available and largely unproven tactics, such as the use of soaps, ash, lime, soil, or local botanicals for direct control, and the recycling of locally procured pathogens. Such local controls need to be tested and understood. Other, more proven tactics, such as the 'push-pull' use of repellent and attractive plants, need to be tested in different environments and in different cropping systems. This need to test and validate many of the locally available practices is urgent.

3. Monitoring, risk assessment and early warning

The appropriate monitoring and use of the information and modelling to develop risk models and maps, as well as information actionable at a local level, including scouting, is fundamental for the prioritization of resources. A data collection application will be developed, linked to a platform that provides real-time data viewing and analysis, and linkage to a risk model and risk mapping.

4. Longer-term research and innovations

There are many promising and possible responses to FAW in Africa, Asia and the Near East and beyond that require long-term research and investment in innovation. From digital sensors and diagnostics to landscape ecology and molecular biology, there are many areas that merit research and local capacity development.

5. Policy and regulatory support

Farmers' decisions in the field are directly influenced by national policies and regulations. For FAW management this is especially true for pesticides policies, regulations and programmes, including allocation of financial resources to the national response from the public budget.

6. Coordination

FAW response requires good coordination, from a local, through national to international levels. National task forces should be established in each country and the TWGs should be supported at an international level.

Global coordination

To strengthen global coordination, FAO has facilitated the establishment of 12 technical working groups (TWGs), which became functional during the second half of 2017. They bring together experts from relevant development partners to share, review, discuss, prioritize and develop joint work plans and proposals. The 12 TWGs directly supported the different technical areas at international level in the six components of the framework as described in figure 6.

Further, in this Global Action for FAW Control, the establishment of global, regional and subregional committees and groups (see figure 6) in addition to national task forces is proposed to support the global programme.

The work at national level will be directly linked to the global political level through the establishment of a **Global FAW Steering Committee**, chaired by the FAO Director-General (DG). This Committee will bring together high-level decision makers and technical leaders to guide the further development and implementation of the Programme. It will endorse the action plan for 2020 - 2022 and guide further investment. The Vice Chair will be the USAID Chief Scientist. Additional Vice Chairs will be from Africa (DG, ICIPE), Asia (Vice President, CAAS), Near East (DG, ICBA), and Latin America (President, EMBRAPA). Other Steering Committee members will include representatives from: Bill and Melinda Gates Foundation, EU Commission, CropLife International, Pesticide Action Network, AfDB, ADB, IADB, World Bank, WTO, and FAO DDN. The Secretary of the Global FAW Steering Committee will be the Director of FAO's Plant Production and Protection Division (AGP). The Steering Committee is foreseen to meet every four months (virtually).

Other committees to be established include:

The **Technical Committee** will provide technical advice to the Global Steering Committee. This Committee will be chaired by the USAID Chief Scientist. The Vice Chair will be the AG-ADG, FAO. Other members of the Technical/Advisory Committee will include the CGIAR (ICRISAT, IITA, CYMMIT), CAAS, USAID, CABI, ICIPE, DFID, GIZ, EMBRAPA, CropLife International, NORAD, IPPC, FAO-AGE, among others.

FAW coordinating unit/secretariat led by the Director of the Plant Production and Protection Division (AGP) will be responsible for the day-to-day implementation, coordination and monitoring of the Global Action. The secretariat will also liaise with all other key internal and external partners to ensure a successful implementation of the Action in cooperation with the IPPC Secretariat.

Regional steering groups will be set up for Europe and the Pacific, Africa, Near East and Asia, chaired by the FAO-ADG Regional Representatives and including relevant key stakeholders, to lead and coordinate regional activities.

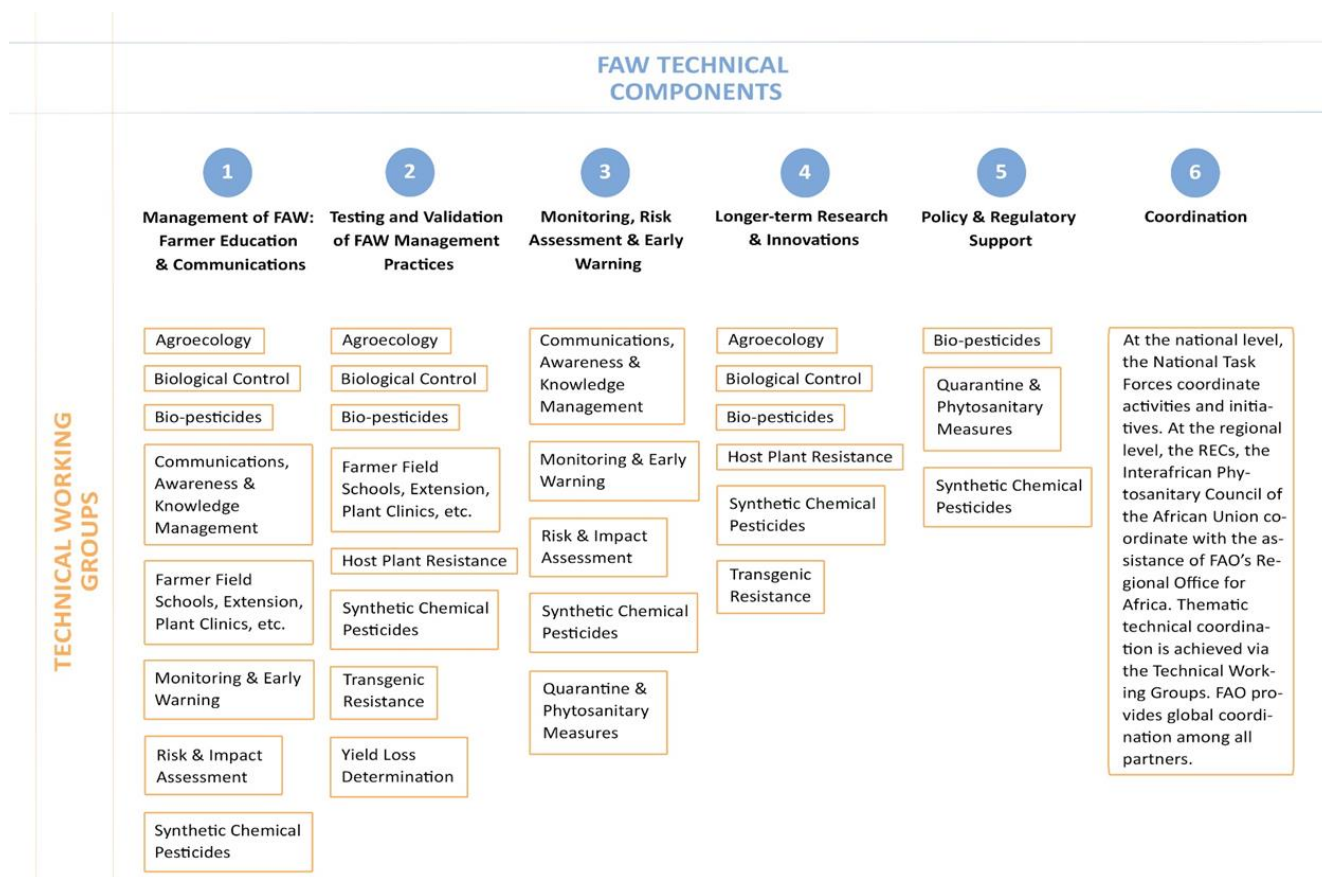


Figure 5: Technical Working Groups support to technical components

Subregional steering groups will be set up in all target subregions. They will be chaired by the FAO Subregional Coordinators who will coordinate activities at the subregional level.



Figure 6: The Global Action for FAW Control global coordination arrangement

A national FAW taskforce will be set up in every pilot country chaired by the Ministries of Agriculture and relevant departments, to implement national activities. Since 2017, FAO has been supporting and facilitating the establishment and capacity building of national task forces on FAW management in FAW affected countries. This will continue under this global action programme.

5.2 Partnership with national governments

Some countries already have their own national responses and programmes, usually through the Ministries of Agriculture. Through the *Global Action for Fall Armyworm Control*, FAO will support each country to develop coherent national FAW sustainable management plans, put preventive

measures in place to reduce the risk of further introduction and spread, provide advice, guidance, and ensure adequate capacity to sustainably manage FAW at all levels.

Partner national governments will facilitate programme activities and will nominate their focal points to be part of the regional and subregional steering committees and the National FAW Task Forces. Governments will facilitate the implementation of the programme activities, such as local transportation, custom clearance for needed equipment, clearance of international personnel, etc.

5.3 Strategy

All the activities under this programme will be globally coordinated.

The programme will be overseen by a Global Steering Committee which will meet 3 - 4 times per year to:

- Assess the new developments in the global FAW situation and the efficiency of the Action at regional level.
- Evaluate the annual progress report of the Action.
- Approve the annual work plan for the Action based on national and regional priorities.

The programme will be open for partnership and cooperation with other stakeholders including regional and international organizations, farmer cooperatives, NGOs, private companies, research institutions etc. for promoting the national FAW IPM strategies, and for the development and validation of advanced management technologies.

5.4 Technical oversight and support

Technical oversight will be provided by the Plant Production and Protection Division and the IPPC Secretariat at FAO Headquarters through its designated FAW Chief Technical Adviser. FAO will provide technical and organizational support through facilitation of the Steering Committee and Technical Working Groups, facilitation of conferences, meetings, scientific visits, and workshops at national and regional levels. FAO will provide support to research activities and farmer training works, and through the development of global action plans to ensure a global coordinated approach, avoiding overlap and duplication.

The programme will draw on the technical expertise and experience from all relevant technical divisions in FAO. The FAO Technical Network on Sustainable Crop Production and Agroecology will be used to further disseminate information about the FAW and the status of implementation of the programme.

Elements of the Norwegian pest and disease app – VIPs – and the Chinese monitoring and early warning system will be integrated into the FAMEWS app for data and information collection, to establish a global FAW monitoring and early warning system.

Technical oversight and input to the programme activities and strategy will also come from the Technical Committee and the 12 TWGs, which are composed of world experts in each of the thematic areas of the sustainable FAW management components. National experts and representatives from regional economic communities and national research centres are represented in these groups. They make recommendations about priorities and gaps and play a technical advisory role in the programme.

5.5 Management and operational support

FAO will develop the appropriate Letters of Agreement or contracts under which the obligations and responsibilities of all parties will be defined. FAO specifically leaves certain work to partners' comparative advantages and organizational missions better dedicated to those areas of work (e.g. longer-term research). As part of the FAO FAW programme, collaborative projects under the Global Action will be reviewed and discussed every six months.

5.6 Operational modalities

FAO will apply direct implementation modality using relevant manual sections of FAO for staff recruitment, for procurement of goods and services from profit firms (MS 502) or services from non-profit organizations (MS 507), etc. This will be done according to DGB/2014/14 in collaboration with DPS (Partnerships and South-South Cooperation Division).

Letters of Agreement (LoAs): The FAW Global Action will facilitate the signing of LoAs to support FAW research, training and study tours.

5.7 Statistics

FAO will be identifying with farmers and other stakeholders, standard data to be collected and recorded in the field for monitoring FAW. This is a requirement before field tools such as a mobile phone app, databases and geographic information systems can be developed. It will allow the same data to be collected in all countries to facilitate comparative analysis and harmonized training. FAO will also be reviewing existing pest monitoring and early warning systems with partners and their potential for integration into FAMEWS.

5.8 Information Technology

In order to allow for the on-time delivery of information materials, FAO has set up a [FAW webpage](#). It contains information for stakeholders, including national governments, media representatives and the general public. Regular updates are provided on the status of FAW, actions being taken for management, new research findings and information documents. All FAW Global Action documents will be uploaded here and be publicly available.

5.9 Monitoring, performance assessment and reporting

The monitoring of the Action will be the overall responsibility of the FAW Secretariat and the technical supervision and guidance of the Chief Technical Advisor (CTA), both at FAO. The Programme Coordinator and the Programme Officer will coordinate the monitoring process. The monitoring activity will be reported through planned periodical evaluation analysis exercises and the programme's phase lifecycle mid-term review. The experiences generated will be documented and disseminated through predetermined programme communication means.

Programme performance assessment is the overall responsibility of the budget holder, who shall coordinate the preparation of progress reports, mid-term assessments and final reports. The CTA will provide technical review and clearance of the reports and ensure inputs from other Technical Officers from within the project task force and from other partners.

Technical progress reporting will be under the FAO Organizational Outcomes 2 and 5, done every 6 months and under the overall responsibility of the secretariat. The following reports will be prepared on an annual basis by the secretariat:

- Financial report: a general overview and status of funds received and disbursed including breakdown for each country.
- Technical report: a progress report detailing results for each target country.

The Office of Evaluation (OED) conducts evaluations of FAO programmes and projects at the global, regional and national levels for increased accountability and learning, focusing on the Organization's strategic positioning and results. OED reports to the FAO Governing Bodies and the Director-General.

A strong and reliable monitoring and evaluation (M&E) system is essential to the success of this Action because of:

- (i) the innovative nature of the programme, necessitating the need to draw useful lessons and guide and inform both the management and implementation of the project;

- (ii) the changing circumstances due to the evolving political and vulnerability context, which could necessitate possible adjustments as well as the rescheduling of programmed activities.

At planning stage, FAO will facilitate the development of a robust M&E plan and implementation design for use at the global, regional, subregional and national level activities and projects.

Technical concerns that are beyond the capacity of the national implementation teams will be referred to the technical services at the national level or technical divisions at FAO headquarters.

5.10 Risk management

The complexity of the Action, with potentially several projects and activities running parallel at different geographical and political zones from global to community levels in Africa, Asia and the Near East proves that a strong risk identification and management plan is needed. FAO's experience and technical competence in this area assures things will be done properly to ensure the programme's success. The risk identification and management plan will be done during the work planning meeting following the launch of the programme.

5.11 Programme timeline

The Global Action for FAW Control will be implemented according to the general schedule outlined in Table 3.

Period	Key Activity Schedule
2019 (Q4) – 2020 (Q1)	Formulate Global Action plan; launch Global Action; establish Global Action Steering Committee; organize parallel actions at regional/sub-regional/national levels.
2020 (Q2–Q4)	Steering and Technical Committees, outreach strategy development; preparation of communication materials; national inception workshops and technical training; baseline data review; science-based technologies validated at field level; national task forces set up; regional coordination set up; high-level conference on FAW Control.
2021	Promotion/dissemination of communication materials; award successful pilots; knowledge sharing activities; regional workshops; capitalization of knowledge and innovations; implement measures to minimize risk of further FAW spread.
2022	Consolidation of results and evaluation of impact, plan phase two.

Table 5: Implementation schedule of FAO's three-year Global Action for FAW Control

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Annex I: Logical Framework - Expected Outcomes, Outputs and Planned Activities

The Global Action for FAW Control programme contributes to food security and improvement of livelihood of smallholder farmers by equipping them to sustainably manage FAW in their cropping systems. The following are the expected outputs and planned activities according to the three main desired outcomes from section 4.3.

OUTCOME 1:

Global, regional, national coordination on fall armyworm sustainable management enhanced

Indicator: A global coordination system with effective communication strategies for stakeholder engagement and productive partnerships, and regional collaboration for FAW sustainable management in place.

Output 1: Committees and Working Groups for implementation and coordination set up

Indicator 1: Number and type of committees and groups established, number of virtual and non-virtual meetings convened

Indicator 2: Number of annual regional meetings held.

Indicator 3: New partnership framework established.

Indicators 4: Amount of resources invested and mobilized by countries.

Activities:

- 1.1.1 Establish and convene the Global Steering Committee.
- 1.1.2 Establish and convene Technical/Advisory Committee.
- 1.1.3 Establish regional, sub-regional steering groups.
- 1.1.4 Establish national task forces.
- 1.1.5 Establish FAW Secretariat.
- 1.1.6 Establish FAW phytosanitary network (IPPC secretariat with relevant RPPOs and NPPOs).
- 1.1.7 Strengthen strategic partnership for FAW management with relevant research stakeholders through the Technical Working Groups.
- 1.1.8 Establish and support the convening of regional and sub-regional steering groups (virtually).
- 1.1.9 Organize annual regional meetings to strengthen collaboration and sharing of experiences and lessons learned on FAW management.
- 1.1.10 Facilitate technical and financial resources.
- 1.1.11 Mobilize resources.

Output 2: Global outreach strategy developed

Indicator 1: Number and types of communication products developed and disseminated for different audiences.

Indicator 2: High-Level Conference delivered.

Indicator 3: FAW sustainable policies and management technology published.

Activities:

- 1.2.1 Develop outreach strategy (FAW website, newsletters and social media strategies) at global, regional and national levels.
- 1.2.2 Develop regional and national communication strategies.
- 1.2.3 Develop and implement national communication strategies, awareness raising campaigns and develop FAW training material for smallholder farmers, including in local languages.
- 1.2.4 Develop publications of FAW sustainable management technology.
- 1.2.5 Disseminate FAW information material on sustainable management technology and practices.
- 1.2.6 Organize a high level conference in second half of 2020.
- 1.2.7 Organize a Global Consultation in the beginning of 2023.

OUTCOME 2:

Crop yield losses caused by FAW are reduced

Indicator 1: Number of countries that have developed and implemented IPM practices and other technologies and policies for the sustainable management of FAW.

Indicator 2: Reduction in maize yield loss in target countries that have implemented IPM practices, technologies and policies for the sustainable management of FAW.

Indicator 3: Number of innovative technologies implemented and guidance developed and disseminated to farmers.

Output 1: National inception workshops in each target country organized and baseline studies conducted.

Indicator 1: number of national task forces established

Indicator 2: number of national plans and baselines conducted

Activities:

- 2.1.1 Conduct baseline studies and risk assessments (infestation levels, yield losses).
- 2.1.2 Support and facilitate the planning and implementation of national inception workshops to develop national action plans for FAW management.
- 2.1.3 Develop national action plans for FAW management, and identify pilot study areas.
- 2.1.4 Conduct baseline data analysis, taking into consideration national policies, pest management systems and all relevant data.

Output 2: National capacity for sustainable management of FAW enhanced and yield losses reduced

Indicator 1: Number of policies and innovative IPM practices for FAW sustainable management developed in collaboration with partners

Indicator 2: number of countries applying and % of areas of application of IPM practices in countries

Indicator 3: % of yield losses decreased in pilot countries after adoption of technologies

Indicator 4: Number of maize farmers who are trained and able to use sustainable FAW management practices in each target country.

Activities:

- 2.2.1 Support countries to compile baseline data studies, organize national inception workshops to develop national action plans for FAW management with the identification of IPM pilot study areas involving FFS facilitators, key farmers, extension officers, government officials and the private sector.
- 2.2.2 In collaboration with partners develop policies and innovative IPM practices adapted to local situations for FAW sustainable management.
- 2.2.3 Support the delivery of national training workshops on IPM and sustainable management and scale up of FAW IPM in ongoing FFS training of facilitators, master trainers and community outreach groups.
- 2.2.4 Organize country-level cross-community visits to IPM testing and validation pilot sites for sharing experiences among the various participating communities.
- 2.2.5 Organize regional training workshops on FAW IPM with national focal points to ensure knowledge sharing and capitalisation, including South-South Cooperation.

Output 3: Information material on sustainable FAW management developed and disseminated

Indicator 1: Number of National FAW Task Forces facilitated to produce and disseminate FAW information and educational materials

Indicator 2: Number of publications on FAW IPM information developed

Indicator 3: Number of farmers who have been provided with the IPM information

Indicator 4: Number of new information technology products (IT) developed for farmers' easy access to information.

Activities:

- 2.3.1 Support National FAW Task Forces to develop, produce and disseminate FAW IPM information and learning materials based on lessons learnt from the Americas, Africa and Asia, to farmers, extension workers and government policy and decision makers.
- 2.3.2 Facilitate National FAW Task Force to scale up the development and translation into local languages of regional and local FFS FAW guidance notes, FAMEWS, and video covering low cost sustainable FAW IPM options.
- 2.3.3 Develop information technology (IT) for farmers' easy access to information on sustainable FAW management (e.g. through FAMEWS and on-demand short messaging services or SMS).

Output 4: National FAW Monitoring and Early Warning Systems improved

Indicator 1: % of countries with national monitoring and early warning system of FAW in place.

Indicator 2: % of countries sharing standard monitoring information with others.

Indicator 3: Number of countries involved in regional monitoring collaboration.

Indicator 4: Number of new technologies or best practices developed and piloted.

Activities:

- 2.4.1 Develop national FAW monitoring and early warning systems in countries, integrated with FAMEWS if feasible.
- 2.4.2 Develop and share standard monitoring data based on FAMEWS.
- 2.4.3 Conduct targeted and tailored national training workshops on application of monitoring and early warning systems such as FAMEWS.
- 2.4.4 Promote regional collaboration on monitoring and early warning by jointing monitoring, sharing data and experience.
- 2.4.5 Enhance tools for global monitoring, including alert devices for advising to member countries.

Output 5: National data collection on FAW infestation and yield losses developed

Indicator 1: Yield losses measured.

Indicator 2: Relationship between yield losses and FAW infestation analysed.

Activities:

- 2.5.1 Conduct research to improve yield measurement methods and approaches such as crop cutting and harvesting unit sampling (quantitative approach) in countries.
- 2.5.2 Review and standardize yield (quantitative and qualitative) measurement tools.
- 2.5.3 Measure the yield losses and analyse the impact of FAW infestation.
- 2.5.4 Conduct yield loss and relationship with FAW infestation study in pilot countries.

Outcome 3:

Risk of FAW introduction and spread to new areas reduced

Indicator: Preventive measures in place in target countries (including regions that are not yet affected and new areas in affected countries).

Output 1: Guidance documents on prevention of FAW introduction and spread, drafted, validated and made available

Indicator 1: Number of formulated guides.

Indicator 2: Preventive measures in place in target countries (including regions that are not yet affected and new areas in affected countries).

Indicator 3: Number of countries validating the guidance developed.

Activities

- 3.1.1 Draft a guidance document on the prevention of FAW (including standards for inspection and surveillance) through collaborative efforts of the Technical Working Groups and Regional Steering Groups with support from the International Plant Protection Convention (IPPC) Secretariat.
- 3.1.2 Organize regional workshops to validate and release guidance on the prevention of FAW (including border control).
- 3.1.3 Support and organize national workshops to validate and release guidance on the prevention of FAW.

Output 2: National and regional training for pest risk assessment conducted

Indicator: Number of training courses organized.

Activities:

- 3.2.1 Organize national and regional training courses of trainers on pest risk assessment for FAW and registration of FAW as a regulated quarantine pest in the countries with PSE and IPPC support.

Output 3: National and regional training on preventive measures (surveillance and inspection) and on pest outbreaks and alert systems conducted

Indicator: Number of training courses organized.

Activities:

- 3.3.1 Organize and coordinate training courses for trainers on FAW surveillance and inspection with IPPC support.
- 3.3.2 Organize and coordinate training courses for trainers on pest outbreak and alert system for FAW with IPPC support.