



Food and Agriculture
Organization of the
United Nations

DESERT LOCUST UPSURGE

Progress report on the response
in the Greater Horn of Africa
and Yemen

January–April 2020



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Foreword

The people of Eastern Africa and of Yemen have demonstrated remarkable resilience in the face of repeated crises over the years. Today, they face yet another enormous threat – to their food security, their livelihoods, and ultimately their survival – the desert locust.

The desert locust is the most destructive migratory pest in the world. Highly mobile, it travels on the wind for up to 150 km per day and feeds on large quantities of any kind of green vegetation, including crops, pasture and fodder. A typical swarm can be made up of 150 million locusts per square kilometre; even a very small, 1 km² locust swarm can eat the same amount of food in one day as about 35 000 people. Unfortunately, the current upsurge has seen swarm sizes reach as large as 2 400 km² – as reported in Kenya in January.

The desert locust upsurge is compounding an already bleak food security situation. Forecasts from the recently-released Global Report on Food Crises indicate that over 25 million people will experience acute food insecurity in mid to late 2020 in Eastern Africa, and an additional 17 million in Yemen. These analyses were conducted prior to the global COVID-19 pandemic, which will likely further undermine food security.

I must acknowledge here the massive efforts of political leaders in the region. Once alerted to the situation, they immediately mobilized staff and resources to kick-start the control operation and engaged with the Food and Agriculture Organization of the United Nations (FAO) to design, implement and monitor technically sound and to-scale operations. Even today, when COVID-19 has created huge disruption and uncertainty, East African leaders have maintained the desert locust response as a national priority. Thanks to this and to the dedication and courage of government workers, surveillance and control is taking place every day in the field, including in hard-to-reach areas.

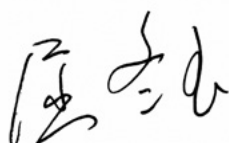
The rapid and sustained support of our humanitarian and development partners has been critical to mitigating the threat posed by the desert locust upsurge. Our partners have been with us from the very outset. High-level advocacy and resource mobilization has been conducted from the start, with the full and active engagement of the UN Under-Secretary-General and Emergency Relief Coordinator, Mr Mark Lowcock. Together, FAO and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) have conducted numerous member briefings in New York, Rome, Geneva and Nairobi, including with the Intergovernmental Authority on Development's (IGAD) Food Security and Nutrition Working Group (FSNWG). Resource partners have stepped up fast and generously. To date, FAO has raised USD 130 million against the current response plan, thereby ensuring continuity in support of control operations as well as the roll-out of livelihoods safeguarding action.

Our gains have been significant; but the battle is long and not yet over. More people are at risk of losing their livelihoods and of worsening food insecurity in the coming months. FAO is already revising and updating its response plan to cover more countries and people in need of urgent assistance in the face of the desert locust threat.

This first quarterly report is part of FAO's accountability framework. It complements and gives a narrative to the global dashboard that was developed and made available to all partners as early as 26 February 2020. This document reports factually the current status of the fight against desert locust. It reflects on already recorded successes, but also examines what has not worked so well and what can be improved, adjusted or scaled up.

The report is also a reminder that, despite COVID-19, our teams are on the ground, side-by-side with governments, regional institutions, other UN agencies and non-governmental organizations.

We can and must protect vulnerable people from the impact of multiple crises: conflicts, climate extremes, desert locust and COVID-19, which ruin development gains and cause further deterioration in their food security. To do this, we need to intensify our efforts further, take advantage of the opportunities provided by South-South and triangular cooperation and continue working together to control the pest and save lives and livelihoods.



QU Dongyu

Director-General

Food and Agriculture Organization of the United Nations

At a glance



Over **42 million** people facing severe acute food insecurity in the ten targeted countries (Global Report on Food Crises 2020)



365 000 ha of land controlled in the ten countries* (January–April 2020)

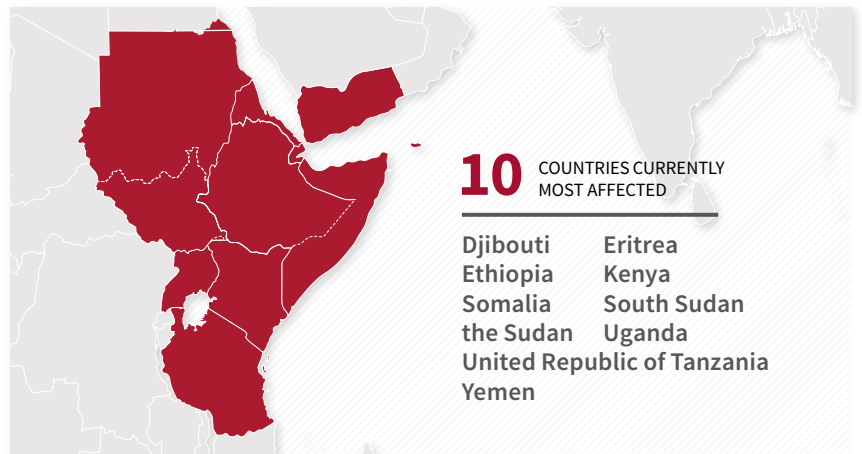


110 000 households targeted for rapid livelihoods protection in nine of the ten countries (activities: June–December 2020)



USD 130 million total funding mobilized by FAO for rapid response and anticipatory action in the ten countries from January to December 2020

Since the start of the desert locust upsurge in the Greater Horn of Africa and Yemen just over four months ago, and the subsequent launch of FAO's crisis appeal in January, a total of USD 130 million has been mobilized (85 percent of the requested USD 153 million). Together with the governments of affected countries and the Desert Locust Control Organization for Eastern Africa (DLCO-EA), this funding will enable the control of 1 million ha of infested farmland and rangeland, protect the livelihoods of 110 000 households, and assist with providing information and coordination to stakeholders across the region.



Source: United Nations world map, February 2019.

Across the ten countries covered by the appeal, over 365 000 ha have been controlled to date, of which an estimated 20 percent was infested by hopper bands and 80 percent by swarms. Thanks to these operations, and based on very preliminary analyses and projections of areas controlled and likely damage caused if not controlled, it is anticipated that 720 000 tonnes of cereal have already been saved, worth around USD 220 million. This is enough to feed almost 5 million people for one year. Through damage averted to rangeland and livestock tropical units, an additional 350 000 pastoral households have been spared from livelihood loss and distress¹.

So far, 63 percent of the budget dedicated to control and surveillance operations has been spent (expendable, non-expendable and contract budget line). The remaining 37 percent has been allocated mainly to countries that will start control operations from June, and to those for which procurement is being finalized (Djibouti, Eritrea, the Sudan and Yemen). It is important to note that over 70 percent of the budget allocated to control and surveillance in Ethiopia, Kenya and Somalia has been committed.

Livelihood interventions started in Somalia in April, while other countries will begin supporting affected communities from June to December 2020.

*Under-reporting in Kenya in April 2020

¹ Analysis to be further adjusted in May and June.

Background



Favourable conditions could lead to 400 times more locusts by June 2020

A massive desert locust upsurge is underway in the Greater Horn of Africa, the Arabian Peninsula and Southwest Asia, with the risk of it spreading to the Sahel region if it is not halted by July.

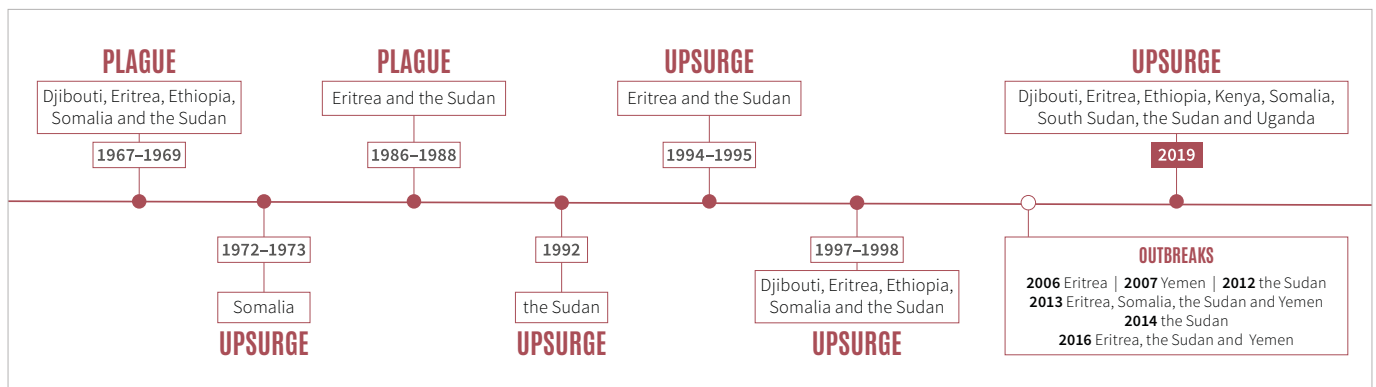
In January 2020, FAO scaled up its activities and launched a formal appeal to contain the upsurge and anticipate impacts on livelihoods. The situation deteriorated rapidly in January, given weather conditions that were unusually conducive to the spread of the pest: after Cyclone Pawan made landfall in early December 2019, flooding in the Horn of Africa created highly favourable breeding conditions for the desert locust. The current magnitude of the problem and the number of countries affected is a rare phenomenon in the region.

Control and surveillance operations are being led by national governments, with FAO providing support in the form of pesticides, biopesticides, equipment, aircraft and training. However, this was not the beginning of FAO’s response to the emerging threat, nor was it the first alert issued by the Organization. In 2019 alone, over 2 million ha were controlled in the frontline countries of Egypt, Eritrea, India, Iran, Oman, Pakistan, Saudi Arabia, Somalia, the Sudan and Yemen.

In December 2018, FAO issued its first warning about a desert locust outbreak that had developed along the Red Sea coast in Eritrea and the Sudan. A second warning was issued in January 2019 on significant swarm formation in the Empty Quarter of Saudi Arabia. This was followed by a meeting in Jordan with affected countries, at which the importance of amplifying surveillance and treatment was stressed.

In July, FAO warned that locust summer breeding was a serious threat to agricultural production in Eritrea, the Sudan, Yemen, parts of Ethiopia, and northern Somalia, and that swarms could invade Kenya by the end of 2019. Further alerts were issued from October to December 2019, highlighting concerns in Ethiopia, Kenya and Somalia. From the outset, FAO country offices have been interacting with donors to raise awareness and funds for control and surveillance efforts, and making use of FAO’s Technical Cooperation Programme to assist governments. In Yemen for example, FAO used its own resources as well as those provided from Belgium through the Special Fund for Emergency and Rehabilitation Activities (SFERA) to carry out control activities.

Figure 1. Timeline of desert locust events in Eastern Africa



Scale-up timeframe

Operational scale-up

The Organization’s response to food chain emergencies such as animal and plant pests and diseases is decided within the context of the Food Chain Crisis Management Framework (FCC). In particular, the current locust response is handled by the Emergency Centre for Transboundary Plant Pests (ECTPP), which integrates the technical and operational capacities of the Plant Production and Protection Division (AGP) and of the Emergency and Resilience Division (PSE) under the overall leadership of Deputy Director-General Laurent Thomas.

In view of the demonstrated scale, complexity, urgency, requested capacities to respond and reputational risk posed by the crisis, the Organization activated a Thematic Scale-Up for desert locust and applied Level 3 (L3) emergency protocols, including fast-track procedures.

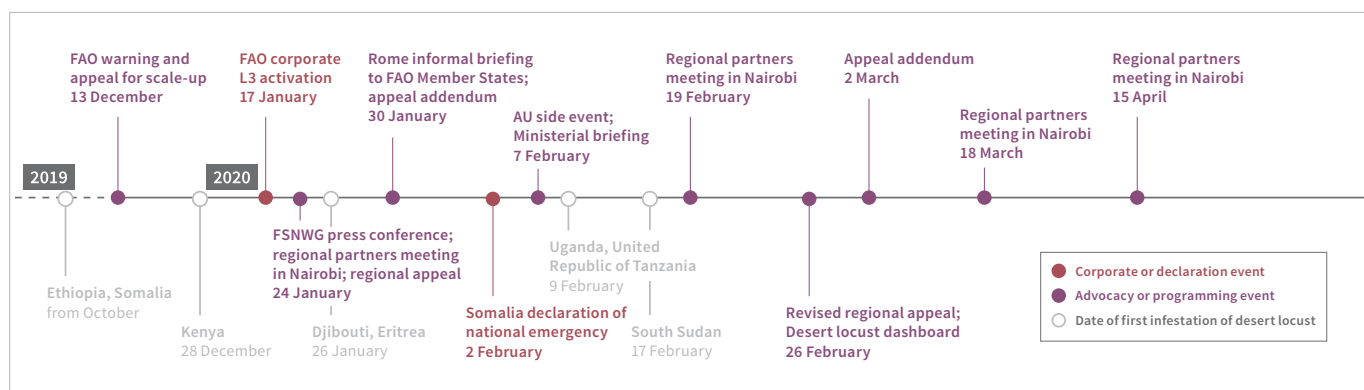
Programmatic scale-up

Applying lessons from the 2003-2005 desert locust upsurge in West Africa and from the implementation of FAO resilience programmes in Eastern Africa, including its Early Warning Early Action (EWEA) agenda, FAO quickly focused on anticipatory action to avert a food crisis by: (i) scaling up support to governments to control the pest; and (ii) undertaking livelihood-saving and recovery interventions. FAO issued a first Appeal for rapid response and anticipatory action in the Greater Horn of Africa on 24 January, followed by two addenda and a revision, calling for a total of USD 153.2 million.

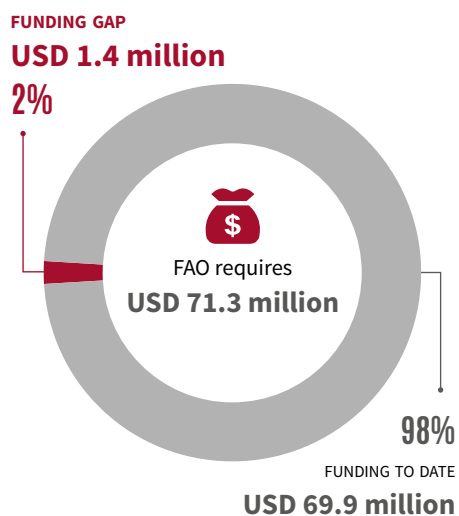
Advocacy and coordination scale-up

On 21 January, an FAO senior management mission visited Kenya to take stock of the situation and advocate for a rapid scale-up of control operations. On 24 January, the Food Security and Nutrition Working Group (FSNWG) organized a highly successful press conference and on the same day FAO and OCHA co-chaired what has become a monthly partners’ briefing and coordination meeting on desert locust.

Figure 2. Scale-up timeline



Curb the spread of desert locust



Donors have been swift and generous in their response – with 85 percent of the current appeal funded as of April 2020. From the outset, FAO country offices have interacted with donors to raise awareness and funds for control and surveillance efforts and made use of FAO’s Technical Cooperation Programme and SFERA allocations to assist governments. Human resources were also provided through standby partners, including Australia, Canada, Denmark, Norway, and the United Kingdom of Great Britain and Northern Ireland. Unfortunately, several logisticians have been unable to travel owing to movement restrictions since the COVID-19 pandemic, however needs continue to rise in countries already battling the locust infestation, and the pest is threatening additional countries, including Iran and Pakistan, with the Sahel on watch.

The Global Network Against Food Crises, a partnership created to identify and jointly implement durable solutions to food crises, has been engaged to support coordination, consensus building, and serve as a platform to discuss the most effective programmatic approaches. The Global Network has a key role to play in supporting the uptake and mainstreaming of anticipatory action, as well as ensuring lessons learned are used, documented and disseminated. In addition, several resource partners made large contributions to FAO’s response within the framework of the Global Network Against Food Crises, including Germany (EUR 20 million) and the European Union (USD 11 million).

Curbing the spread of the desert locust is the most critical and urgent component of the regional response plan to fund, as the aim was to reduce the numbers and the food security impact of the two possible generations of the pest from January-March and April-June.



A vehicle used for locust surveillance drives through a farm in Geerisa, Salal Region, Somaliland.



Spraying operation in Geerisa, Salal Region, Somaliland.

With a view to this, FAO called on humanitarian and development partners to provide resources by the end of February at the latest, factoring in the time needed to organize supply and delivery of control and surveillance assets to tackle as many hopper bands and immature swarms as possible. By that deadline, USD 49 million had been mobilized against the response plan, including USD 24.7 million for component 1 (curb the spread of desert locust). In other words, almost 35 percent of the most urgent component of the programme was funded in just one month.

FAO's pre-financing system

In order to place purchase orders as early as possible, through SFERA FAO pre-financed a number of projects on the basis of funding commitments (hard pipeline). In total, FAO advanced USD 29 million from 28 February to 6 April 2020 while waiting for grant agreements to be signed, an approach that allowed FAO to supply a number of assets before lockdowns were imposed due to COVID-19.

In addition, a loan of USD 10 million was approved by the UN Central Emergency Response Fund (CERF) to ensure control operations were fully funded and operational.

The supply chain

While frontline countries have some spraying capacity, others had to build up a pool of assets in order to start surveillance and control. Desert locust is a niche market, and the global stock of control equipment and products is limited. Anticipating a potential COVID-19 impact, FAO decided to spread the risk across the supply chain of control assets, diversifying sources of products and prioritizing batch deliveries over bulk procurements. This strategy proved successful, especially for pesticides, as no disruption to stocks have been observed despite delays in delivery and the need to manage minimum stocks in early April (particularly in Kenya).

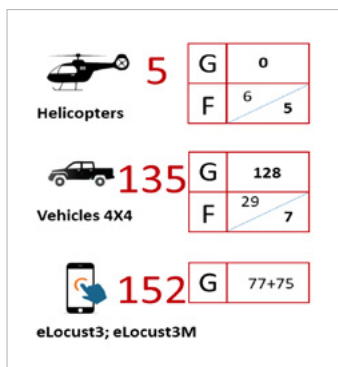
Government leadership

Governments have been at forefront of the desert locust surveillance and control operations. For frontline countries, these began in early 2019, while for Ethiopia and Somalia it was in September/October, in January for Kenya, and in February for South Sudan and Uganda. Governments quickly identified local solutions, such as engaging DLCO-EA, hiring airplanes, organizing minimum but essential supplies of pesticides, and mobilizing people on the ground to start surveillance operations. In January and February 2020, ahead of FAO's contribution, governments had already controlled around 150 000 ha. With the support of FAO, over 800 000 ha have been treated since January (based on data from eLocust reports), including in countries not originally covered under the appeal. More specifically, by the end of April a further 365 000 ha had been treated in countries in Eastern Africa.

Continuous surveillance

A good surveillance and detection system is paramount for a successful control campaign and for the optimal use of spraying assets. However, for the period of January to April 2020, this proved to be the most complicated component of the programme.

At country level, government staff involved in the control campaign employed various tools and processes to report swarms and hopper bands. For example, several WhatsApp groups were established in Kenya in January, however reports could not be geo-referenced or uploaded to a centralized database. Furthermore, the geographic coverage was incomplete and data were missing for some of the breeding areas in the affected countries.



G: Government assets
F: FAO assets (purchase/received)

The case of eLocust

In 2000, eLocust software was developed for desert locust teams to enter survey and control data into a digital device while in the field. In 2004, eLocust2 was developed by FAO in collaboration with the French Space Agency (CNES), and from 2012 to 2014 the software was upgraded



Using eLocust3m in Kipsing, Isiolo county, Kenya.

to eLocust3, with more than 450 units pre-configured and distributed to 20 frontline countries (including 77 units in frontline countries in the current response plan).

In 2020, FAO collaborated with Pennsylvania State University to develop eLocust3m, a smartphone app containing the basic data of eLocust3. FAO also partnered with Garmin to develop eLocust3g, a basic version for GPS satellite communicator systems. Lastly, FAO developed a web-based version, eLocust3w. All three initiatives were fast-tracked and developed in less than a month. The eLocust3m and eLocust3w versions work offline and save data to the mobile device until internet connectivity is available. Both tools are available in local languages. The eLocust3g sends data in real time via the Iridium satellite network. Subscription and data transmission fees are paid by the three FAO regional locust commissions. Data from the three tools are presented in tables and on maps, downloadable from the internet and sent automatically every day directly to National Locust Control Centres.

To date, fewer than 100 users are using eLocust3m to report frequently. The adoption and scale-up of eLocust3m is too slow and the strategy is shifting from sole use by government authorities to larger groups of users for crowdsourcing. FAO works with academic institutions from across the world in surveillance, reporting and control of desert locusts, including by developing software and new technologies to facilitate crowdsourcing and information sharing. With dedicated funding provided for innovation by the Bill and Melinda Gates Foundation, FAO is further developing and putting to use the following: (i) digital tools for improved data collection in real time (eLocust3g and eLocust3m); (ii) remotely-sensed 1km² soil moisture maps that are updated every ten days in order to improve control by identifying potential breeding areas; and (iii) a trajectory model to estimate swarm migrations for improved early warning.



Surveillance helicopter in action in Samburu County, Kenya.

Surveillance assets

FAO has provided vehicles and helicopters for surveillance.

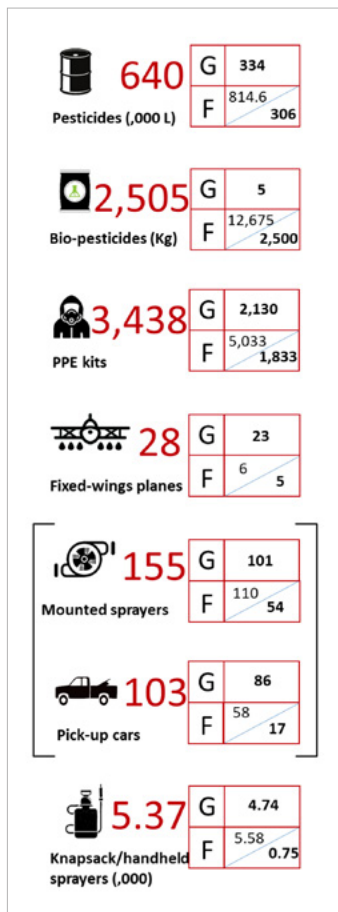
Helicopters

Helicopters are used to identify areas of vegetation and locust infestations such as swarms and hopper bands, as well as to verify unconfirmed reports and visit areas that are difficult to access by land. The main advantage of using helicopters over fixed-wing aircraft is their ability to land almost anywhere and allow field officers to then cover the area on foot.

FAO opted to rent eight helicopters – two for Kenya that arrived in mid-April, three for Ethiopia that arrived in late April, and three for Somalia, two of which arrived in early May and one that will be delivered towards the end of the month. The helicopters for Somalia are dual-purpose, meaning that they can be used for both surveillance and control operations.

Vehicles

Vehicles help to ascertain if locusts are present over a large area – such as sandy plains or green vegetation – as well as to measure the size of settled swarms and large hopper bands and determine control areas. While governments in the region provided vehicles and staff to conduct surveillance, FAO is making additional vehicles available where they are most critically needed.



G: Government assets
 F: FAO assets (purchase/**received**)

Ground and air control operations

This section provides information on the combined efforts of DLCO-EA, FAO and governments, as well as a detailed list of assets currently available for the campaign, acknowledging that some additional inputs are still to be delivered or procured (mainly in frontline countries for the control campaign to start in June). A control campaign is a chain of interconnected actions that FAO and governments have developed and will implement and monitor together.

Advance planning

The regional response plan estimated that around 1 million ha needed to be controlled by June in order to reduce locust populations to a level that does not pose a threat to other subregions or to the food security and livelihoods of rural communities in Eastern Africa. The figure of 1 million ha was based on analyses of previous upsurge and control operations.

The list of assets to deploy in order to reach that target was established accordingly, factoring in government contributions and including an analysis of the necessary match between equipment (such as planes and mounted sprayers) and the number of staff of the ground. In other words, the more planes in the air, the greater number of ground staff are needed. Organizational structure and logistics.

Each country developed its own organizational structure and logistics based on swarm infestations and breeding areas. Kenya is now working from five operational centres, Ethiopia and Somalia from three each. The centres all have a coordinator and teams in charge of surveillance, scouting, ground control and aircraft. For Ethiopia and Kenya, FAO provides an aircraft contract manager, a campaign coordinator and an information manager to help collect data on control activities; reporting on control is still below standard and is one of the priorities for May and June.

Supply of assets and impact of COVID-19

By the end of January, FAO had developed an itemized list of assets (equipment, pesticides, biopesticides, protective clothing, vehicles, etc.) to purchase or rent for the control campaign. By mid-February, an inventory of equipment available worldwide had been conducted and international tenders launched. Through a process of triangulation, FAO was able to quickly receive (late February) 20 mounted sprayers from Morocco, ten of which were distributed to Kenya, six to Somalia and four to Uganda. This helped to kick-start ground control operations while waiting for further deliveries through commercial procurement.

Conventional pesticides and biopesticides

The procurement, delivery, internal transport, storage and disposal of pesticides is probably the most difficult part of managing a locust control campaign. However as they represent some 50 percent of the total cost, it is important to manage pesticides as effectively and efficiently as possible. The choice of pesticide depends greatly on context and conditions of the area to be treated.

FAO has developed technical manuals informed by independent scientific advice (the Pesticide Referee Group and the World Health Organization (WHO) risk assessment classifications) that provide governments with detailed guidance on choosing the appropriate insecticide.

FAO is supporting governments in purchasing ultra-low volume (ULV) formulated pesticides, which reduce the amount of pesticide used and do not require mixing with water. Pesticides are procured according to FAO guidelines and in close consultation with governments to assess site-specific contexts as well as compliance with national laws and regulations.

None of the pesticides used are rated by WHO as Class Ia (Extremely hazardous) or Class Ib (Highly hazardous). Of the chemicals being used in the campaign in Eastern Africa, Chlorpyrifos, Deltamethrin and Fenitrothion all have a rating of Class II (moderately hazardous), while Malathion is class III (slightly hazardous).

All procured pesticides and biopesticides undergo a rigorous quality control process. FAO uses Baltic Control®, a leading global inspection, verification, testing and certification company. Baltic Control is internationally recognized and operates through a network of offices and trusted representatives across all geographical regions of the world.

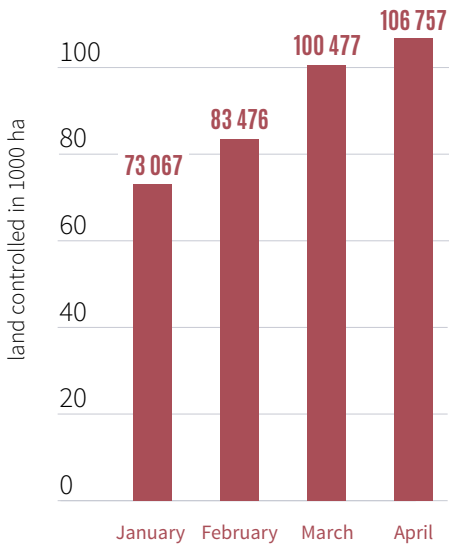
Table 1. Breakdown of pesticide use in Eastern Africa

Pesticide	Concentration	Volume	Countries where it is being used
Chlorpyrifos	240 g/L of pesticide	1 L/ha	Ethiopia
Deltamethrin	12.5–17.5 g/L of pesticide	1 L/ha	All countries under the appeal, except Somalia
Fenitrothion (aka Sumithion)	400 g/L of pesticide	1 L/ha	Kenya
Malathion	925 g/L of pesticide	1 L/ha	Ethiopia
Biopesticide Metarhizium	5x10 ¹⁰ spores/g	0.05 kg/ha	Ethiopia, Kenya, Somalia

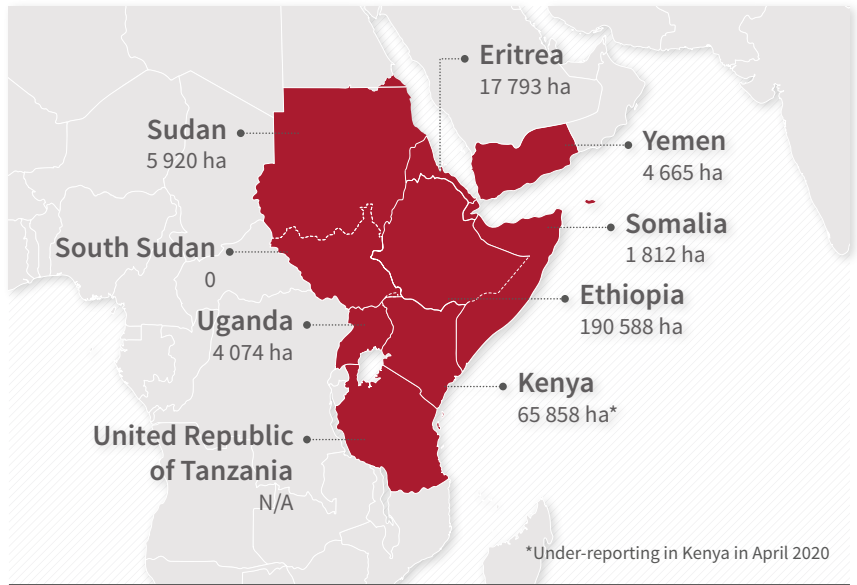


Training of National Youth Service officers in Gilgil, Kenya.

Figures 3 and 4. Land controlled (in ha) between January and April 2020



Source: FAO, April 2020.



Source: United Nations world map, February 2019.

During the upsurge in Eastern Africa, FAO is supporting governments in purchasing ultra-low volume (ULV) formulated pesticides, which reduce the amount of pesticide used and do not require mixing with water. Pesticides are procured according to FAO guidelines and in close consultation with governments to assess site-specific contexts as well as compliance with national laws and regulations.

Biopesticides

Biopesticides are also used in the control campaign in Somalia, but to a more marginal extent in Ethiopia and Kenya. These are based on a fungus called *Metarhizium acridum*: when the spores come into contact with the locust, they penetrate it and multiply inside the insect. Two products are available commercially, derived from different strains (or isolates) of the fungus – Green Muscle (isolate IMI330189) and Novacrid (isolate EVCH077). They come in bags of dry spores that need mixing with oil or diesel to obtain a suspension.

The biopesticide targets only desert locust, making it safe for humans, animals, other insects such as bees, and vegetation, thereby safeguarding the local ecosystem. The challenges associated with biopesticides are low availability on the market, lengthy production lines, and above all slower impact than conventional pesticides. The insect weakens over three to four days, and only dies around a week after spraying, with maximum impact only observed about two weeks after treatment. This means that for extreme cases biopesticides can't replace conventional chemical sprays, which take less than half the time. They work best in holistic control strategies that are designed to prevent rather than cure large-scale outbreaks.

Aircraft

Within the infested countries, suitable aircraft were only available in Kenya, making it necessary to contract overseas companies. Requirements to supply fuel and other logistical support were included in these contracts, and the aircraft are equipped for ULV spraying.

Companies supplying aircraft from overseas incur a considerable expense simply by positioning their aircraft, so they demand a guaranteed usage in aircraft hours. Five Air Tractor 802 aircraft were delivered between 3 and 20 May 2020, three of which are stationed in Kenya and two in Ethiopia. FAO is also deploying three spraying helicopters for Somalia.

Community sensitization campaign

A regional desert locust Community Sensitization Taskforce (CST) for Eastern Africa was established in Nairobi in March 2020, co-chaired by FAO and OCHA. The objective of the CST is to expand efforts on raising public awareness and existing educational campaigns on desert locust control in the Greater Horn of Africa. Of the affected countries, the focus is on Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan and Uganda. So far, 27 NGO partners, IGAD, UN agencies and Food Security Cluster representatives have participated in the bi-monthly online meetings.

Key messages and radio texts were developed and translated into 11 local languages through OCHA's engagement of Translators without Borders. These messages provide information on the nature of the desert locust, what is being done to combat it, advice for farmers and pastoralists on safety measures associated to locust control operations, child protection, and local contact information.

The messages were well received and used by partners in mainstream and community radio campaigns (talk shows, adverts, etc.) which are the primary channels for rural populations. They have also been disseminated through farmer field schools, focus group discussions, community bazaars and WhatsApp.

Some examples of how these key messages and radio text were utilized (despite COVID-19 slowdowns):

- in north and northeast Kenya, partners embedded the key messages and had them translated into Samburu. Channels used so far include SMS, community radio, a Somali language radio advert and WhatsApp. Their current estimated reached is 50 000 households;
- FAO in Uganda translated the messages into Akarimojong and Lugbara and used them in ongoing community radio programming (in collaboration with the Government's line ministry);
- FAO in South Sudan is managing a toll-free hotline, running English and Arabic radio announcements on two popular stations (Radio Miraya and Eye Radio), as well as in Acholi and Lotuku in Torit. Nation-wide radio coverage is being developed, and the Food Security Cluster is also disseminating messages to a wider pool of partners for extended use;
- in Ethiopia, dissemination will be through the Food Security Cluster and the Government taskforce, where key messages will be used to develop information and other awareness-raising material;
- FAO in Somalia will roll out voice and text messages to its SMS database in Somali language, complementing radio announcements on 17 stations, a UN Assistance Mission in Somalia (UNSOM) radio talk show and Radio Ergo;
- all CST partners have committed to use the content to inform their social media calendars;
- a series of flyers is also under development with FAO's Office of Corporate Communications (OCC) and AGPM.

In collaboration with OCHA, FAO is coordinating a data collection exercise with partners on use and reach, with a view to recommending actions and remaining responsive to community information needs. The first compilation was circulated on 23 April 2020.

Monitoring efficacy of products

Post-spraying assessments are conducted on a regular basis in all countries to estimate mortality rates of sprayed insects. Initial reports from March-April indicate that air control operations are 90 percent successful, while ground control operations are 70 percent successful.

Looking ahead to the 2020 agricultural seasons, several assessments are planned to help FAO, governments and partners to better understand desert locust-related impacts on households and livelihoods.

Impact assessments and environment, health and safety

Impact assessments

Following the 2019 short rains season, FAO, national governments and partners engaged in multiple assessments to estimate the impact of the desert locust outbreak on affected regions. These included a rapid assessment in northern Kenya, an impact assessment in Ethiopia, and incorporating desert locust impact modules into seasonal assessments in both Kenya and Somalia. The results were used to inform FAO's desert locust response programmes, as well as to develop food-insecure population estimates and IPC processes across the three countries.

Looking ahead to the 2020 agricultural seasons, several assessments are planned to better understand desert locust-related impacts on households and livelihoods. Relevant stakeholders will be brought together to conduct impact monitoring and assessments, using harmonized tools and methodologies. This process has been coordinated under the umbrella of the regional Greater Horn of Africa FSNWG, co-led by FAO and IGAD.

It will involve continuous monitoring of desert locust impacts, ensuring the availability of data and information to inform timely planning of food security and livelihood response programmes, and a full impact assessment during the harvest period to understand the extent of damage incurred and related food security impacts. Where possible, the full assessment will be integrated into existing seasonal assessments to reduce costs and avoid duplication of efforts. Information collected during both the monitoring and full impact assessment stages of this exercise will feed into regular food security and response analyses, including any upcoming IPC analyses.

The timing of assessments will correspond to the main 2020 agricultural seasons across the region, with continuous desert locust impact monitoring while crops are in the field and the full impact assessment conducted during the harvest period.

In context: COVID-19

It should be noted that in the current context of COVID-19, desert locust impact monitoring during the agricultural season will be based primarily on remote data collection. In particular, this component of the exercise will rely heavily on remote key informant interviews, conducted either by phone, email, or online, as well as household surveys conducted by mobile phone in coordination with the World Food Programme's (WFP) mobile Vulnerability Analysis and Mapping (mVAM) system.

From the outset it was clearly understood that the desert locust upsurge would impact the livelihoods and food security of rural populations. The magnitude of the impact, however, is currently under review (see also the section on needs assessments) but the three scenarios established in February remain valid: a best-case scenario with 500 000 people affected; a mid-case scenario of up to 2.5 million people affected; and a worst-case

scenario of up to 5 million people falling under IPC Phase 3 and above. It is highly possible that the efforts to control desert locust, especially in the face of COVID-19, will require investments until the end of the year, while also shifting up to a mid-case scenario. The current version of the FAO Appeal was based on the best-case scenario and targeted 110 000 households.

Overview thus far

- the short rainy season harvest and rangeland conditions were good, thanks to favourable rainfall from September to December and beyond;
- with rains continuing in January and February, farmers were able engage in off-season cropping;
- desert locust damaged rangeland from October in Ethiopia and Somalia and from January in Kenya. Continuing rains over the period slightly offset the impact of desert locust (regeneration of vegetation);
- by December, desert locust had only marginally damaged crops, thus allowing for a good harvest. However, off-season crops were severely impacted from late December to February. The bulk of assessments conducted in February and March confirmed significant losses to off-season crops;
- IPC analyses conducted post-harvest (early 2020) indicated that food security conditions in the region improved in the first quarter of 2020, from 21.7 million to 16 million people in IPC Phase 3 and above, in light of good harvests and despite desert locust;
- the majority of farmers will have food stocks until June this year;
- with the extended rainy season until February 2020 and the beginning of the long rains on time (March), rangeland has not dried up significantly this year, and the balance between loss of biomass due to desert locust and regeneration due to good rains prevented a significant deterioration of food security and nutrition beyond normal patterns;
- the impact of desert locust on farmers, agropastoralists and pastoralists will accelerate at the end of the rainy season (June);
- farmers who lose their crops between April and June will have no food stocks from late June until December 2020 (next harvest);
- pastoral communities that depend on rangeland and who lose grass and biomass due to desert locust will have to move further in search of grazing land;
- the coping strategies of farmers and agropastoralists in times of food shortages include seasonal migration and asset stripping;
- pastoralists' coping strategies in times of feed shortages include atypical migration in search of grazing areas, with potential implications for security and stability;
- COVID-19 will likely affect seasonal migration.

To be assessed

- areas most affected by desert locust for fine-tuning of geographic targeting;
- extent of damage, although indicators point to a caseload of people in need of assistance in line with the mid-case scenario developed in February, i.e. up to 2.5 million people affected by desert locust.

Environmental and health assessments

Pesticides used in desert locust control operations are mainly ULV formulation and require technical expertise to apply. Control operations are therefore carried out only by technical teams from the Ministries of Agriculture of beneficiary countries, with the support of FAO experts. Specific trainings have been conducted for the teams, based on FAO's desert locust guidelines for survey, ground and aerial control operations. Staff involved also receive a pocket Standard Operating Procedures (SOPs) booklet for desert locust survey and control.

Guidelines and standards

FAO developed guidelines and standards for monitoring the environmental, health and safety standards and efficacy of control operations. These are being adhered to in the field to minimize the risks of improper use of chemical pesticides. In collaboration with national authorities, FAO is establishing monitoring protocols to ensure health and environmental safety during the control campaign. The first countries where the system is being deployed are Ethiopia and Kenya, where operations have been scaled up. A similar framework is planned for May in all the remaining non-frontline countries of the appeal (frontline countries already have a system in place).

The main actions identified are as follows:

- continuous monitoring of the environmental impact of locust control, ensuring that feedback with national locust units is maintained to adjust operations and mitigate the risks of chemical pesticides on the environment and human health; and
- establish a platform for dialogue between national environmental management authorities in Ethiopia and Kenya and the Locust Control Unit (base operators), in order to ensure monitoring of pesticide stocks and safe disposal of empty drums, complemented by the provision of drum crushers.

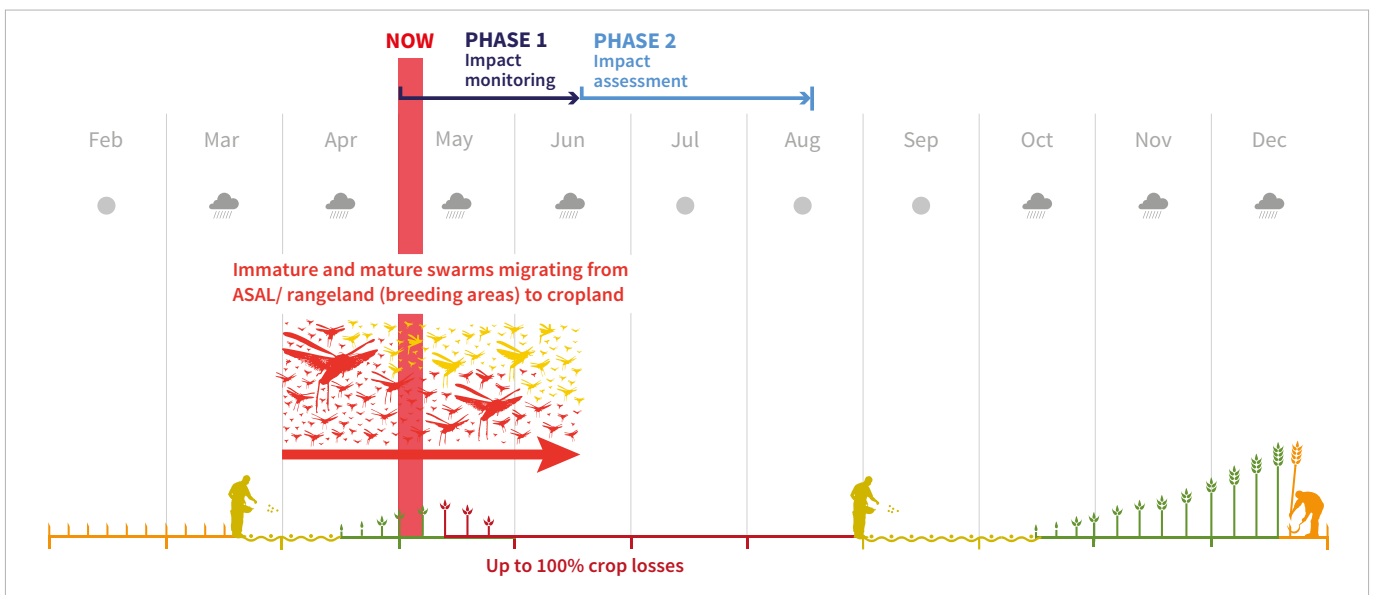
Training

The following training sessions will be conducted in May in Ethiopia and Kenya and in June in South Sudan and Uganda, in order to enhance the skills and knowledge of practitioners and assist national Locust Control Units and services to establish quality control teams:

- training of quality control teams on good practices for operations, safe handling of pesticides and safe disposal of empty pesticide containers, in collaboration with national counterparts;
- training for medics and paramedics on acetylcholinesterase (AChE) level measurement and analysis kits;
- training of biologists and environmentalists on sampling pesticide residue, sampling non-target fauna and interpreting ecological side-effects.

Personal protective equipment (PPE) and AChE kits are also being provided.

Figure 5. Timeline of impact monitoring and assessment vs agricultural calendar and desert locust life cycle



Safeguard livelihoods

Farming re-engagement packages

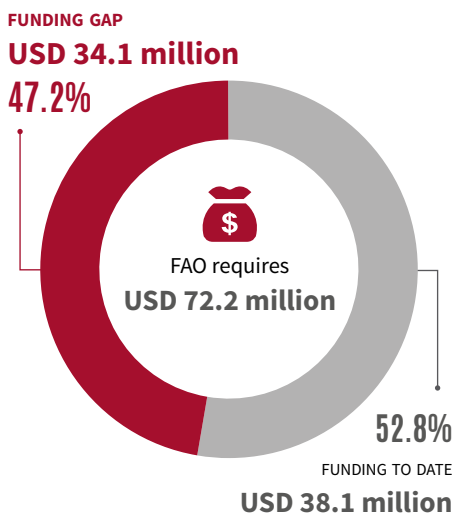
The type of assistance envisaged under the response plan remains valid, as well as the proposed seasonality.

Cash assistance

From June until December, purchasing power should be bridged from a lost crop harvest until the next harvest. Already established cash transfer modalities and conditions will be applied, and fine-tuning is taking place at country level.

Partnerships

FAO will engage with partners, including through sub-contracting arrangements, at country level in order to guarantee timeliness, appropriate geographic coverage and needs-based targeting. The aim is to protect livelihoods (no asset stripping) and ensure population numbers are stabilized (fundamental at a time of COVID-19) with no deterioration in food security. This is based on the assumption that food will be available at market level, despite desert locust and COVID-19 (market functionality to be confirmed by partners engaged in food security clusters/sectors) and that no significant COVID-19 induced food price hikes are reported in rural areas.



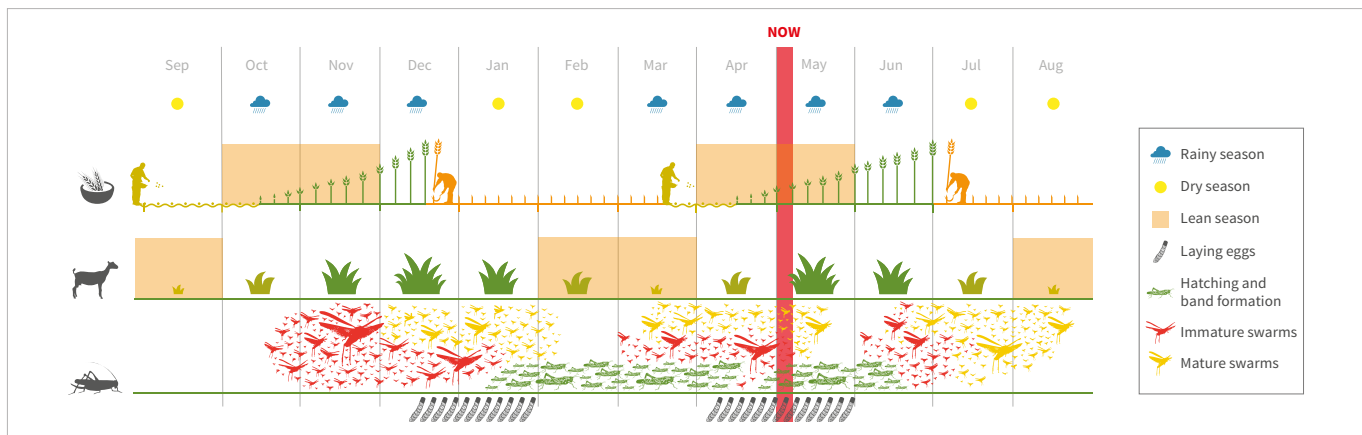
Agricultural packages

From August to September, inputs will be made available to affected farmers and agropastoralists, on time for the short-rains planting season. The composition of the packages must be discussed at country level through the appropriate coordination platforms. Kits will therefore differ from one country to the other.

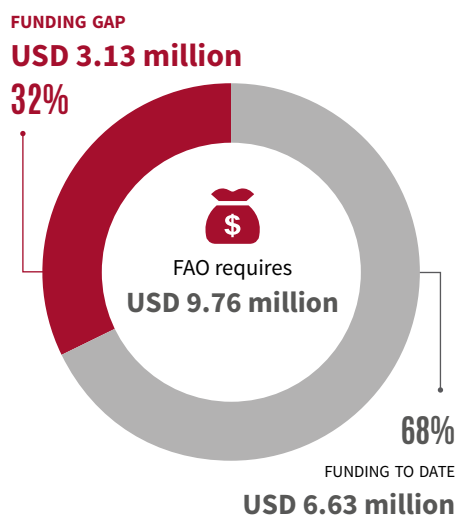
Livestock-based livelihoods packages

Livestock-based livelihoods will be protected through the provision of supplementary feed where pasture has been severely affected by desert locust. Range cubes or multinutrient blocks can boost livestock nutrition and support production (particularly milk yield), resulting in rapid

Figure 6. Agricultural calendar vs. desert locust life cycle



Coordination and preparedness



improvements to household food supply and nutrition.

Deploy rapid surge support

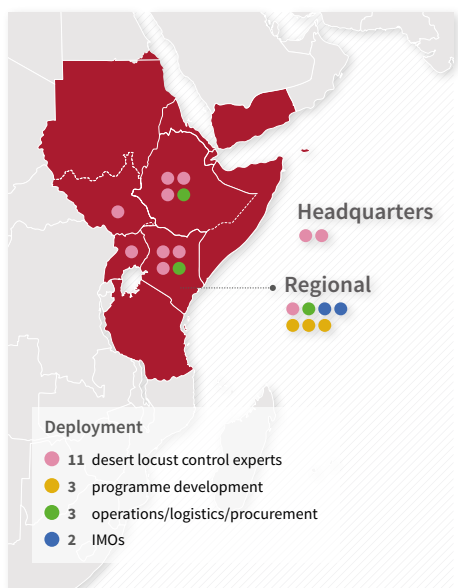
From the activation of the corporate L3 on 17 January, FAO augmented its capacity with 19 additional staff, with the first deployed to the region just four days later. To date, staff have been deployed from various fields of expertise for an equivalent of 1 100 working days. Of these, 12 are still deployed while seven have completed their assignments.

Facilitate regional partnerships and collaboration

Desert locust surveillance, impact assessments and response activities were planned and organized in close collaboration with a number of regional partners. For example, the Eastern Africa FSNWG, co-led by FAO and IGAD, coordinated early warning efforts as early as December 2019, with the publication of three products (one alert, one press release, and one special report) outlining the likely future food security implications of the upsurge. This was followed by the formation of three FSNWG desert locust sub-working groups, focused on coordinating efforts across agencies relating to: (i) remote sensing work; (ii) harmonized impact assessment tools and methodologies; and (iii) desert locust-related food security analyses and projections. FAO and OCHA also co-led a fourth working group on desert locust community engagement.

Additionally, FAO is coordinating closely with national governments and country-level Food Security Clusters and working groups where they are present, on desert locust surveillance, impact assessments, and livelihood response planning.

Figure 8. Surge deployment to date



Source: United Nations world map, February 2019.

Regional advocacy and national-level coordination

Advocacy

The regional FSNWG organized a press conference on 24 January 2020, intended to alert development partners of the threat posed by desert locust to food security and to call for IGAD Member States to join forces and scale up surveillance and control operations. The press conference was the largest ever attended for an IGAD event.

Regional coordination

Together with the OCHA Regional Bureau, the FAO Subregional Office for Eastern Africa, through its resilience unit based in Nairobi, is co-chairing a monthly coordination and briefing meeting for partners. Table 2 summarizes the briefings held so far.

Date	Topics covered	Participants
24 January	<ul style="list-style-type: none"> • situation update • launch of FAO response plan 	35 Nairobi-based partners
19 February	<ul style="list-style-type: none"> • field work update • introduction to revised FAO response plan • discussion on role of NGOs in livelihoods response 	40 Nairobi-based partners
18 March	<ul style="list-style-type: none"> • funding situation update • presentation from technical working groups (community sensitization, needs assessment) • call for clusters (Somalia, South Sudan, Sudan and Yemen) and other sector working groups (especially Ethiopia) to lead livelihoods response • presentation of global dashboard as accountability tool 	72, including capitals and Nairobi-based partners (virtual meeting)
15 April	<ul style="list-style-type: none"> • situation update • presentation of achievements to date, including impact of COVID-19 on supply chains • reminder of call for clusters and partners to contribute to issues related to surveillance, needs assessments, community sensitization and to lead on livelihoods response 	210, including FAORs, capitals and Nairobi-based partners (virtual meeting)

In addition, FAO developed a regional online dashboard on 26 February. The tool is updated as often as necessary and at least every week. It provides essential information about the regional response plan, including on funding, procurement of assets, surveillance and control.

Intergovernmental collaboration

As a side event to the African Union Summit on 7 February in Addis Ababa, the African Union Commission, FAO and the Government of Ethiopia warned that if not controlled, the current situation would be seriously amplified by new locust infestations, with a high possibility of further spread to Eritrea, South Sudan, and Uganda (which has since happened).

The joint meeting briefed ministers and officials from eight Eastern African countries, key partners and the media on the dire situation of the desert locust infestation in the region. The unprecedented threat posed to food security and livelihoods was highlighted, as well as the potential



A desert locust in a wheat field in Kipsing, Isiolo county, Kenya.

for this to become a regional plague that could lead to further suffering, displacement and conflict. The meeting presented ongoing operations and recommended the way forward to scale up control interventions.

Building on this, IGAD organized a number of closed-doors ministerial meetings and additional consultations with key regional partners. On 23 April, IGAD called for a virtual meeting with its Member States, DLCO-EA, FAO and other UN agencies and NGO partners, with the aim of discussing a joint IGAD-Near East management of desert locust and providing a platform to: (i) share experiences on country-level locust control operations; (ii) discuss joint IGAD-Near East harmonized locust control within the framework of a regional and inter-regional operational plan. The meeting was conclusive and a regional partners' plan will be developed (strategic, not programmatic, since this already exists with FAO).

National coordination

While the FAO subregional office for Eastern Africa provides overall coordination and advocacy for the FAO regional response plan, it is important that coordination takes place at national level. In Somalia, South Sudan and Yemen, the Food Security Clusters should be the natural platform for coordination. In other countries where Clusters are not active, this should fall under the umbrella of existing sector working groups.

Strengthen regional and national capacities and enhance preparedness

DLCO-EA

DLCO-EA is the regional pest and vector management organization established by an international Convention signed in Addis Ababa in 1962, mandated to promote control operations and forecast techniques against upsurges and plagues of desert locust in Eastern Africa. The organization maintains its own fleet of fixed-wing aircraft for crop spraying, as well as radio and mobile (vehicle-mounted) transmitter/receiver sets with approved frequencies for official communication in the region. Pest and weather information and data are therefore routinely exchanged, aircraft movements monitored and contact maintained during field operations or transit flights.

The current desert locust upsurge underscored the importance of DLCO-EA. However, there is an urgent need to modernize its fleet of fixed-wing aircraft, increase their number and invest in additional pilots and staff to prepare for the next generation of experts. So far, no resources have been allocated to support DLCO-EA under the FAO response plan; attention should be paid to this in the next version.

Use of modern equipment and technologies

Over the last few years, unmanned aerial vehicles (UAVs) or drones have become one of the world's most talked about technologies and used in a wide range of professions, including by surveyors, agronomists, infrastructure inspectors, and humanitarian aid workers. It is therefore legitimate that since the beginning of the upsurge, FAO was often encouraged or questioned about the use of drones for both control and surveillance.

Control

Drones are unlikely to become part of the solution in the short term. Although they are indeed used on some commercial farms to control certain pests, the technology available on the market does not spray ULV. Even if drones can be used on swarms (six drones controlled by one operator) and during the night when the pest isn't flying, the current autonomy and capacity of the equipment (batteries and pesticide tanks) cannot match the magnitude of an upsurge. In other words, it would be hard to go to-scale as a huge number of drones and operators would be needed. Providing they are equipped with the right sprayers, drones could be used for targeted control, such as treetops that ground control operators cannot access, or in areas that are hard to reach by plane or vehicle (narrow valleys for example).

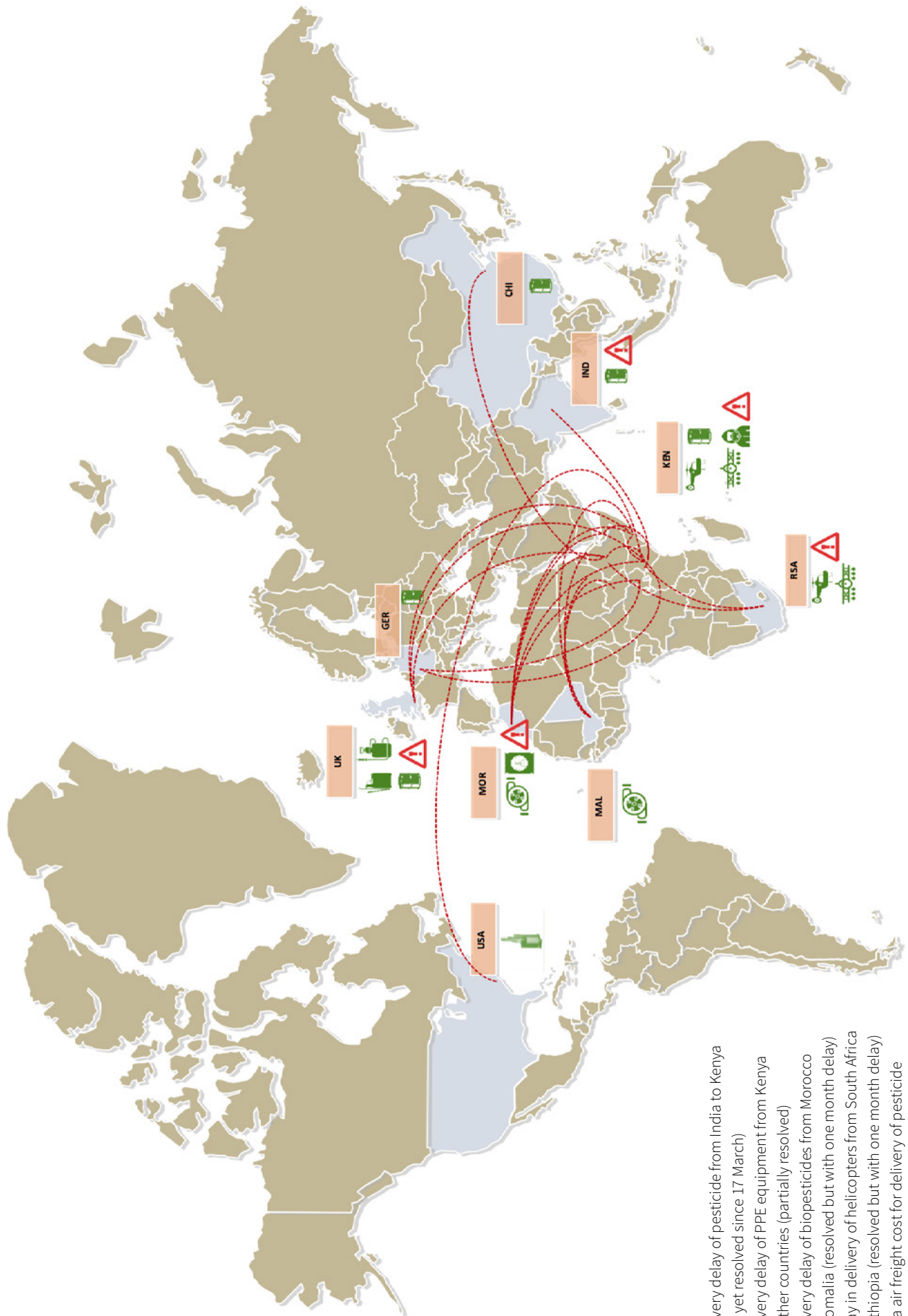
Surveillance

The use of UAVs for detection and monitoring is foreseen under the response plan, in particular through resources from the Bill and Melinda Gates Foundation that are earmarked for innovation. Technical feasibility and contractual discussions are ongoing with potential service providers. On technical aspects, FAO will be looking at UAVs equipped with photogrammetric and navigation equipment with a ground resolution of up to three centimetres. Furthermore, the use of drones must comply with country-by-country airspace regulations. Discussions are ongoing in Kenya as a first test.

Satellite imagery

FAO's DLIS regularly uses satellite imagery to monitor rainfall and green vegetation in locust breeding areas, in order to advise countries and field teams and provide early warning. In addition, FAO is collaborating with Airbus to pilot desert locust damage estimates using remote sensing technology. More specifically, FAO is using high resolution satellite imagery of areas of northern Kenya, where locust hopper bands and swarms have been reported through eLocust, in order to determine whether related vegetation loss can be estimated. Unlike typical normalized difference vegetation index (NDVI) imagery that is available at ten-day intervals, these were taken at much shorter intervals that allow the analysis to reduce the effect of outside factors (e.g. seasonal changes) and isolate the observed impacts of the locusts.

Annex 1. Supply chain and constraints due to COVID-19

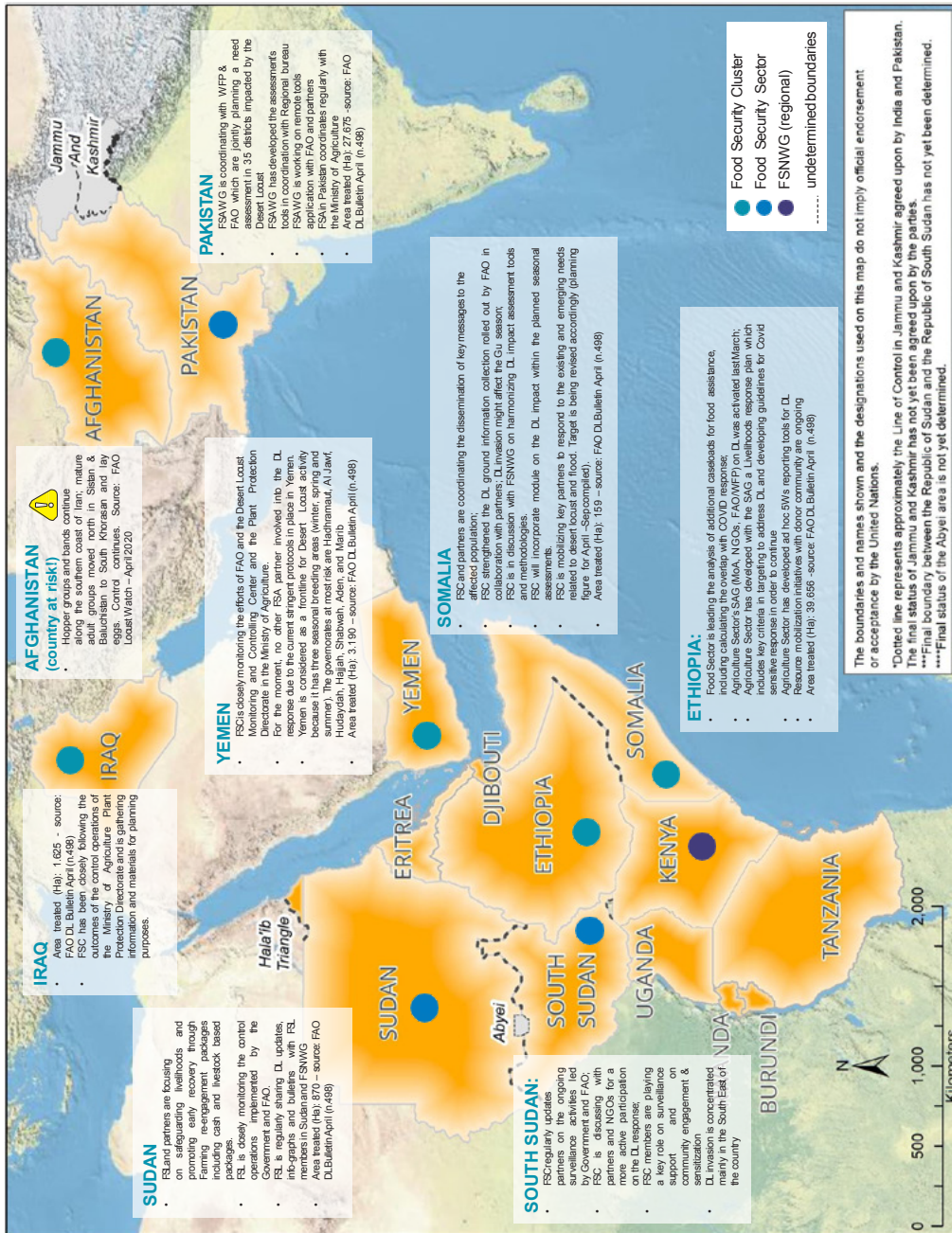


- Delivery delay of pesticide from India to Kenya (not yet resolved since 17 March)
- Delivery delay of PPE equipment from Kenya to other countries (partially resolved)
- Delivery delay of biopesticides from Morocco to Somalia (resolved but with one month delay)
- Delay in delivery of helicopters from South Africa to Ethiopia (resolved but with one month delay)
- Extra air freight cost for delivery of pesticide from UK to Kenya (addressed)



DESERT LOCUST OUTBREAK SNAPSHOT Food Security Clusters/Sectors Response

30 April 2020



- USEFUL LINKS:**
- FAO Desert Locust Dashboard
 - FAO Locust webpage
 - FAO Locust Watch
 - FSNWG Special report on DL of SC webpage
 - IGAD
 - WFP Emergencies



Food and Agriculture Organization
of the United Nations



www.fscluster.org | info@fscluster.org | [Desert Locustwebpage](http://DesertLocustwebpage) | [FSUseful Toolkit](http://FSUsefulToolkit) on Coordination

Background

Desert locust outbreaks occurred along the Red Sea shores in winter of 2018/2019. Swarms emigrated from these areas to Central and Eastern regions from January to March 2019. Two generations of spring breeding spread to the Horn of Africa and to the India-Pakistan border in June 2019. Two more generations occurred in the latter area as a result of the best monsoon rains in 25 years. (source: Locust Watch FAO) Desert locust outbreak critically affects agriculture-based livelihoods and food security. The current crisis (from December 2019) is affecting countries and communities with high percentage of population in Phase 3 and above of the Integrated Food Security Phase Classification (IPC) and fragile economic stability.

COVID Impact on DL response

The COVID pandemic has a direct and indirect impact on the Desert Locust control and response; that may include delays on the arrival of pesticides, kits & equipment, sprayers and means of transports; there is also a concern on the raise of prices for transportation and other costs. Mitigation measures are being put in place. DL response in most countries is recognized as National priority and governments put their full staff and capacity on the ground.

EAST AFRICA REGION (FSNWG)

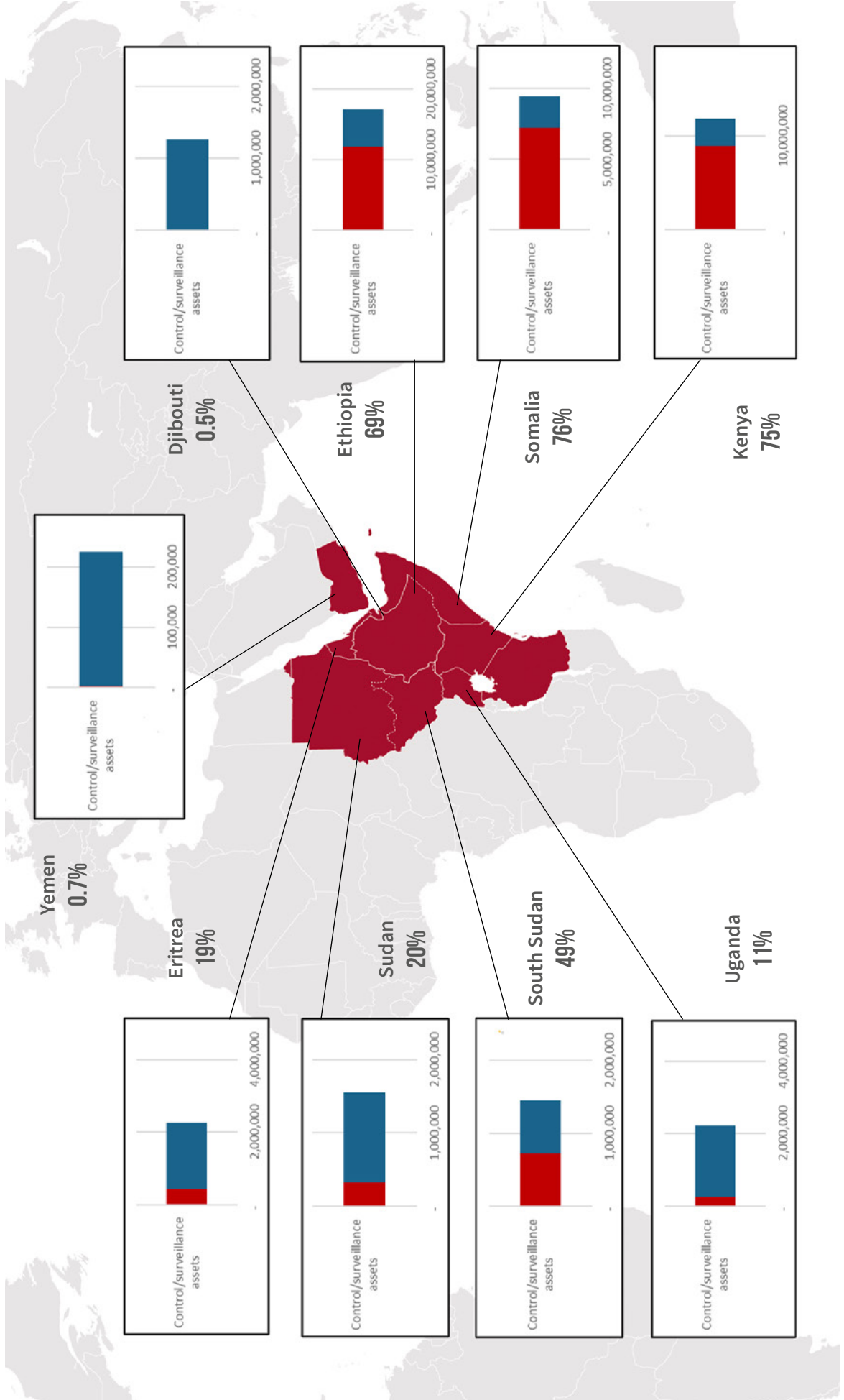
The Nairobi-based Greater Horn of Africa Food Security and Nutrition Working Group (FSNWG) is a coordination body in the Eastern and Central Africa Region which is playing a key role on information sharing and analysis relating to the locust outbreak, bringing together partners and technical experts. FSNWG is co-lead by FAO and IGAD.

The FSNWG is coordinating the below TWGs

- Remote Sensing
- Assessment methodology and tools
- FS analysis and reporting

Annex 3. Budget overview

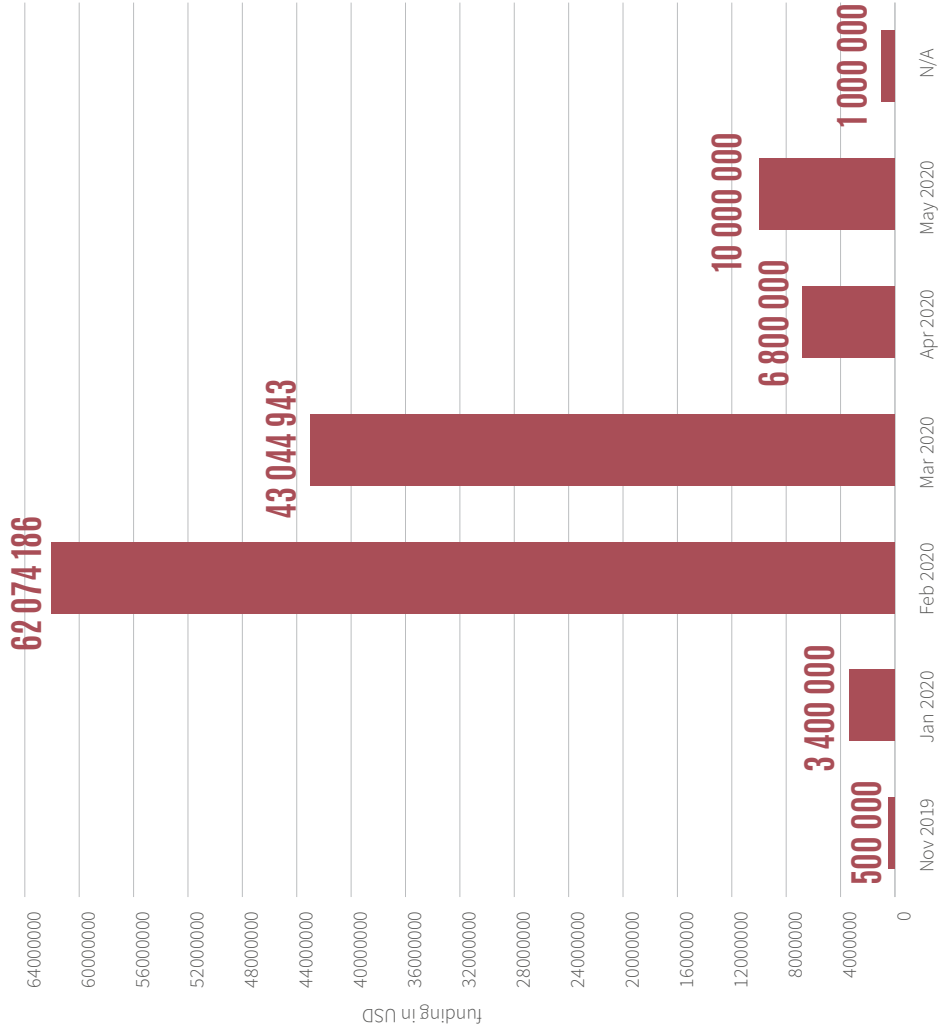
Row Labels	Sum of Appeal by pillar	Sum of Pledged Funds	Sum of Active Funds	Sum of Total Delivery as of 28 Apr 20	Delivery %	Funds available for the procurement of goods and services	Delivery % on goods and services
Coordination	9,760,000	6,941,951	6,451,951	459,562	7%	47,430,577	63%
Curb the spread of desert locust	71,270,000	71,704,813	66,132,313	30,870,158	47%	29,755,788	27%
Safeguard livelihoods and promote early recovery	72,170,000	40,854,865	37,234,465	2,470,677	2%	2,313,098	27%
Grand Total	153,200,000	119,501,629	109,818,729	33,800,398	31%	56,103,569	57%



Annex 4. Funding to date

Donor	Approval/pledge month	Geographic focus	Funding (USD)
Ministry of Agriculture of the People's Republic of China	February	Ethiopia, Kenya, Uganda	1 200 000
Sudan Humanitarian Fund (OCHA)	April	Sudan	2 400 000
The Norwegian Agency for Development Cooperation (NORAD)	April	Ethiopia, Somalia	1 800 000
The Russian Federation	May	Ethiopia, Kenya, Somalia, South Sudan	10 000 000
Louis Dreyfous Foundation	April	Ethiopia	100 000
The Swiss Agency for Development and Cooperation	February	Uganda, Kenya, Somalia, RTEA	1 029 736
Office Of U.S. Foreign Disaster Assistance (OFDA)	January	Ethiopia	800 000
African Solidarity Trust Fund (ASTF)	February	RTEA	1 000 000
Ministry of Foreign Affairs of Denmark	January	Kenya	800 000
FAO	January	Kenya	500 000
FAO	January	Somalia	500 000
Commission for Controlling the Desert Locust in the Central Region (CRC)	February	Eritrea, Ethiopia, Sudan	800 000
Food and Agriculture Organization of the United Nations	November 2019	Ethiopia	500 000
Swedish International Development Cooperation Agency	February	Ethiopia, Somalia	4 136 000
Central Emergency Response Fund (CERF)	February	Ethiopia, Kenya, Somalia	10 000 000
Kingdom of Belgium	February	Ethiopia	500 000
FAO	January	Uganda	500 000
FAO	February	Eritrea	500 000
Directorate-General for International Cooperation and Development (EU DEVCO)	March	Ethiopia, Kenya, Somalia, Eritrea, Djibouti, South Sudan, Uganda, RTEA	10 665 267
FAO	February	South Sudan	500 000
FAO	February	Djibouti	500 000
European Civil Protection And Humanitarian Aid Operations (ECHO)	February	Ethiopia, Somalia	1 102 536
Canada – Department of Foreign Affairs, Trade and Development (DFATD)	February	Kenya, Uganda	750 000
The Bill and Melinda Gates Foundation	February	Ethiopia, Kenya, Somalia, Uganda, Eritrea, South Sudan, RTEA	10 000 000
Government of the Federal Republic of Germany	February	Ethiopia, Kenya, Somalia, Eritrea, Djibouti, South Sudan, Uganda, Djibouti, RTEA	21 978 032
Department of International Development of the United Kingdom (DFID)	February	Kenya, Somalia, Ethiopia, RTEA	6 446 660
Abu Dhabi Agriculture and Food Safety Authority	N/A	Eritrea	1 000 000
FAO	January	Sudan	300 000
FAO	February	Yemen	500 000
Italian Agency for Development Cooperation	March	Eritrea	414 011
US Agency for International Development (USAID)	March	Ethiopia, Kenya, Somalia, Sudan, RTEA	18 500 000
Minister for Foreign Trade and Development Cooperation of the Netherlands	February	Eritrea, Djibouti, Uganda	1 131 222
Ministère de L'Europe et des affaires étrangères français	March	Ethiopia, Somalia, South Sudan	3 393 665
Mastercard Foundation	March	Djibouti, Eritrea, Ethiopia, Somalia, Kenya, Uganda, RTEA	10 000 000
Sudan Humanitarian Fund (OCHA)	April	Sudan	1 000 000
Stand-by Partners	March	RTEA	72 000
African Development Bank	April	Sudan, RTEA	1 500 000
TOTAL			126 819 129

Annex 5. Funding over time



Saving livelihoods saves lives

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