



FAO “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”

**Note on locust management in Caucasus and Central Asia**  
**& required assistance over the next years**  
**(February 2018)**

**Background**

The “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)” has been implemented since October 2011 to the benefit of ten countries, namely Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Uzbekistan. Its overall objective is to reduce occurrence and intensity of locust outbreaks in CCA, thus limiting threat or damage to crops and rangelands and safeguarding rural population food security and livelihood, as well as minimizing impact of locust control measures on human health and the environment. The immediate objectives are to develop regional cooperation and strengthen national capacities to improve locust management in CCA<sup>1</sup>.

The Programme is part of the FAO “Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES)” approach and it is therefore inspired by the key concepts of the locust preventive control strategy. It includes the six following expected results/outputs:

- Result 1 - Regional cooperation developed for better locust management
- Result 2 - National capacities strengthened
- Result 3 - Locust issues and disasters better anticipated and mitigated
- Result 4 - Improved response mechanisms to locust outbreaks
- Result 5 - Impact on human health and the environment mitigated and monitored
- Result 6 - Public information and awareness increased.

The Programme started thanks to the contribution received in 2011 from the United States Agency for International Development (USAID) covering the ten countries (2011-2017); it has also been supported by Japan/Japan International Cooperation Agency (JICA) as well as by Turkey (under the FAO-Turkey Partnership Programme) and FAO (Regular and Technical Cooperation Programmes), through national or sub-regional projects. The various contributions have not equally concerned all CCA countries, taking into consideration the baseline situations, countries’ needs and funds’ availability.

During the annual Technical Workshop on Locusts in CCA held in November 2016 in Astana, Kazakhstan, the results achieved over the 2011-2016 period by the Programme were reviewed, with an excellent feedback received from the ten CCA countries and two participating donors, USAID and Japan/JICA. Amongst the main achievements was the now existing regional cooperation with the creation of an active technical network on locusts in CCA as well as the strengthening of capacities on a wide range of locust-related topics, including introduction of modern tools for locust survey and control. The way forward was also discussed and the main directions identified by CCA countries for the coming years. It was agreed that additional resources needed to be mobilized to reply to the CCA countries’ request to pursue the Programme. A Concept Note was thus prepared by FAO in 2017 and shared with all CCA countries for review.

The annual Technical Workshop on Locusts in CCA held on 13-17 November 2017 in Dushanbe, Tajikistan, allowed in-depth discussions with all CCA countries about the content of new project(s) as part of the whole “Programme to improve national and regional locust management in Caucasus and Central Asia (CCA)”, based on countries updated needs.

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<sup>1</sup> The three locust pests in CCA are the Asian Migratory Locust, *Locusta migratoria migratoria* (LMI), the Italian Locust, *Calliptamus italicus* (CIT) and the Moroccan locust, *Docostaurus maroccanus* (DMA).

## **Main current challenges: three main directions for the coming years**

While the overall objective of the Programme remains valid, three main directions were identified for the forthcoming years, as described hereafter. They were determined taking into account the results achieved during the 2011-2016 period as well as the updated needs at the national and regional levels.

### **1- Towards the sustainability of the existing regional cooperation**

The 2011-2016 period, i.e. from Programme start, has allowed creating a technical network on locust issues within CCA. Because regional cooperation is crucial for the successful management of locusts, which are transboundary plant pests, this network needs to be maintained and consolidated; implementation of some key regional activities will continue and a mechanism shall also to be put in place to ensure that regional cooperation will be pursued in the long term, beyond the Programme.

### **2- Towards the implementation of an effective locust preventive control strategy**

Annual treated areas in all ten CCA countries have varied from 1.9 to 6.9 million hectares (ha) over the past decade (from 2006 to 2017), with an average of 4 million ha. It represents a considerable area. If well designed and implemented, the locust preventive control strategy, which proved to be the only one sustainable over the long-term from economic, social and environmental perspectives, would contribute reducing the annual number of infested and treated hectares – this also means reducing damage on crops and rangelands and contributing more to the preservation of food security and livelihood of vulnerable rural communities, minimizing negative impact of locust control on human health and the environment and decreasing financial costs.

Over the past thirty years, FAO has been successfully promoting this strategy, which is based on appropriate monitoring and data collection followed by data analysis resulting in more accurate forecast and early warning and early reaction. The efforts made so far in CCA within the Programme rely on the experience gained in other geographical areas and against other locust species. However, a shift is needed to effectively implement such a preventive control strategy in CCA. To achieve this result, in-depth work is required in several directions: a better localization and description of locust hotspots (potentially suitable habitats under specific conditions), thus allowing targeting more precisely survey operations/itineraries; more accurate locust monitoring resulting in proper filling-in of well-designed forms; and enhanced analysis and forecast including thanks to modern tools such as the Automated System for Data Collection (ASDC) and the locust Geographical Information System (GIS) entitled “Caucasus and Central Asia Locust Management System (CCALM)”.

### **3- Towards further harmonization and improvement of human and operational capacities**

The Programme has contributed to update and harmonize locust knowledge and anti-locust practices. As specifically requested by countries, efforts should continue in strengthening human capacities for all of them, as part of the process for improving locust management both at the national and regional levels and with a view of implementing in CCA the world-wide recognized best practices. This concerns locust monitoring but also locust control operations as well as mitigating and monitoring their impact on human health and the environment. In addition, due to different initial baselines (in terms of human, operational and financial resources), some countries have benefitted from far more assistance than others. This comprises equipment, including transportation means, which are necessary to adequately carry out locust survey and control operations. So far, delivery of equipment has occurred mainly for demonstration/training purposes with the exception of Afghanistan, Kyrgyzstan and Tajikistan, for which the ongoing project funded by Japan/JICA (2015-2018) has made a difference. Uzbekistan would also need assistance in terms of locust survey and control equipment. In addition, the availability of devices (tablets) for ASDC use should be ensured within the whole region considering the need to support this innovative approach and the operational use of the system.

While these three directions have been identified, the Programme design, i.e. subdivisions between the various existing results/outputs, remains the same as it includes all main topics related to locust management. The activities to be carried out in the coming years, either to be pursued or started, fit in this framework, which provides a comprehensive and common umbrella for different projects contributing to the Programme and which may cover different countries.

## Proposal for new projects

Considering the above, a proposal for new project would be as follows:

- **Project impact and expected outcome**

**Impact:** the project would contribute to food security and livelihood of rural populations in CCA by preventing and limiting the threats posed by locusts and damage to crops and rangelands in the respect of human health and the environment.

**Expected outcome:** the expected outcome of the project would be improved national and regional locust management in CCA, through implementation of a sustainable regional cooperation and effective locust preventive control strategy as well as increased knowledge and best practices.

- **Participating countries**

Because of the transboundary nature of the three locust pests, any consistent management can only be ensured through a regional approach. For this reason, all **ten CCA countries** should be covered by new projects to be developed under the Programme umbrella. Such projects should then be customized according to a number of parameters, including priorities and specific countries' needs, as explained more into detail in the next paragraph. This will allow promoting regional cooperation, harmonization and transfer of information, competencies, knowledge, best practices and lessons learnt in CCA and elsewhere.

- **Main outputs and activities**

Under the well-defined Programme outputs, the new projects should allow providing an extension of the already implemented activities, replicating some of them to the benefit of all countries and also introducing new ones. While [Annex 1](#) provides a Roadmap and detailed proposal, as a result of in-depth discussion held with CCA countries in November 2017<sup>2</sup>, the main features are as follows:

- Activities that represent the cornerstones for successful management of transboundary plant pests based on the locust preventive control strategy (and fully fits with the identified three main directions for the coming years) should concern all ten countries, as follows:
  - Activities related to regional cooperation: annual Technical Workshops, joint activities, and identification of a long-term mechanism for its sustainability;
  - Improvement of human capacities, with specific focus on early warning/early reaction and thus prevention of locust crises: enhanced data collection, analysis, forecast and reporting; and operational use of ASDC and CCALM.
- Other project activities would target some countries, particularly for new/pilot ones and for the improvement of operational capacities, through delivery of locust survey and control equipment. In terms of equipment, main needs for the three Caucasian countries -Armenia, Georgia and Azerbaijan- concern locust monitoring. Afghanistan, Kyrgyzstan and Tajikistan have already benefitted from substantial equipment thanks to the current Japan/JICA project but stressed the need for further assistance. Uzbekistan has also indicated several times over the past years the need for such locust survey and control equipment. The three other CCA countries, Kazakhstan, Turkmenistan and the Russian Federation, suffer less or not from shortage of operational and financial means; in terms of equipment, specific assistance was requested only for supporting the introduction of ASDC and CCALM, including with a view of advocating for their use with the national authorities.

- **Duration**

Considering the expected results, a **five-year duration** is strongly supported for the new project. This appears as a reasonable timeframe considering the three main identified directions, i.e. towards the sustainability of the existing regional cooperation, the implementation of an effective locust preventive control strategy and the strengthening of capacities, in particular on data collection, analysis, forecast and reporting, including thanks to the operational use ASDC and CCALM in most CCA countries.

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<sup>2</sup> Annual Technical Workshop on Locusts in CCA, held on 13-17 November 2017 in Dushanbe, Tajikistan.

## Annex 1- Expected outputs and proposed activities

### 1) Programme Roadmap

- **Table n. 1.** Overview on expected outputs and proposed activities against new projects

OUTPUTS/ACTIVITIES	DESCRIPTION	BENEFICIARIES		TIMEFRAME				
		ALL	SPECIFIC COUNTRIES	Y1	Y2	Y3	Y4	Y5
<b>OUTPUT 1- Regional cooperation further developed</b>								
Activity 1.1. Facilitate regional exchanges for better management of locust situations	National and regional monthly bulletins produced every year during the locust campaign & annual Technical Workshops organized	✓	All beneficiary countries					
Activity 1.2. Support joint or cross-border surveys (CBS)	Bi- or multilateral CBS supported	✓	All beneficiary countries					
Activity 1.3. Organize country-to-country visits within CCA	Bi- or multilateral country-to-country visits organized within CCA	✓	All beneficiary countries					
Activity 1.4. Identify the best long-term solution for sustainable regional cooperation	Appropriate mechanism identified with and agreed upon by countries	✓	All beneficiary countries					
Activity 1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme	Project management and coordination ensured	✓	All beneficiary countries					
<b>OUTPUT 2- National capacities further strengthened</b>								
Activity 2.1. Extend Training-of-Trainers (ToT) on locust management to all CCA countries	ToT: regional, national and briefing sessions organized; refresher courses held	✓	*ToT: countries that haven't fully benefitted from it yet: Armenia, Azerbaijan, Georgia, Kazakhstan, Russian Federation, Turkmenistan and Uzbekistan *Refresher courses for Afghanistan, Kyrgyzstan and Tajikistan					
Activity 2.2. Make available background documentation	Monograph on the Italian Locust translated into English/printed/despached; Practical guidelines "on the three locust pests in CCA" and on "pesticide risk reduction of locust control operations" printed/despached & additional ones (for instance on survey, control, information management, etc.) produced	✓	All beneficiary countries (except those that will already receive such background documentation in the framework of the current Japan/JICA project )					
Activity 2.3.a. Organize exposure visits on locust management outside CCA	Exposure visits on locust management organized (Morocco or other country outside CCA)		Turkmenistan and Uzbekistan					
Activity 2.3.b. Support post-graduate education/fellowships	One or two fellowships/post-graduate students on locust related topics (applied research)		As per selection of topics and students following calls for interest					
Activity 2.4. Support applied research	One grant provided		Topics and beneficiary(ies) and topic(s) to be identified					

<b>OUTPUT 3- Locust issues and disasters better anticipated</b>						
Activity 3.1. Strengthen technical and operational capacities for locust surveys	Survey equipment delivered		Based on needs and specific requests			
Activity 3.2. Support introduction and operational use of monitoring and analysing systems: Automated System for Data Collection (ASDC) and Caucasus and Central Asia Locust Management System (CCALM)	*ASDC: tablets delivered *CCALM/national level: GIS introduced and trainings on its maintenance and use delivered *CCALM/regional level: GIS management and improvement ensured *Regular training/refresher courses: ASDC, CCALM&QGIS	✓	All beneficiary countries			
Activity 3.3. Enhance preparedness for locust risk management through harmonized national contingency plans	National contingency plan available in at least one pilot country		Kyrgyzstan or Tajikistan			
<b>OUTPUT 4- Improved response mechanisms to locust outbreaks</b>						
Activity 4.1. Strengthen human and operational capacities for locust control	*On-the-job training of young mechanics/ technicians on maintenance, calibration and functioning of ULV sprayers organized; *Control equipment delivered		*On-the-job training for countries largely or increasingly using ULV sprayers, in particular Afghanistan, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan *Equipment: based on needs and specific requests			
Activity 4.2. Promote less harmful pesticides and alternatives to conventional pesticides as well as modern spraying techniques	E-Committee on pesticides for producing an updated pesticide list; Advocacy for less harmful/alternatives to conventional pesticides, including field trial/demonstration on biopesticides' use	✓	All beneficiary countries, with field trial/demonstration of biopesticides use in Uzbekistan			
<b>OUTPUT 5- Impact on human health and the environment mitigated and monitored</b>						
Activity 5.1. Mitigate impact of locust control operations on human health and the environment	*Personal Protective Equipment (PPE) delivered; *Management of pesticides and empty containers facilitated, incl. pilot activity on empty containers ; *Extension material for staff		*Equipment: based on needs and specific requests *All beneficiary countries and, for pilot activity, Kyrgyzstan *Extension material: all beneficiary countries			
Activity 5.2. Monitor impact of locust control operations on human health and the environment	*National system for environmental and health monitoring of locust control developed; *Human Health and Environmental Monitoring Teams reinforced or set-up *Pesticide residue analysis and impact assessment conducted		*Three/four additional beneficiary countries *Kyrgyzstan and Tajikistan as well as two additional beneficiary countries *In one beneficiary country or outside the region to the benefit of all countries			
<b>OUTPUT 6- Public information and awareness increased</b>						
Activity 6.1. Develop awareness among local populations	Ensure information of local populations on locusts and on risks related to control operations	✓	All beneficiary countries			
Activity 6.2. Enhance visibility of locust issues to promote regional cooperation and improve management	Take advantage of all above activities to advocate for both high-level and technical support within concerned countries	✓	All beneficiary countries			

## 2) Detailed description of proposed activities

### OUTPUT 1- Regional cooperation further developed

#### *Activity 1.1. Facilitate regional exchanges to manage locust situations*

- **Monthly national and regional bulletins on locust situations and management** (every year during the locust campaign, from March to August). The preparation of the national bulletins will need to be linked with the locust Geographical Information System in CCA (CCALM): two Information Officers will have to be designated per country (on countries' own budget) for managing CCALM and also preparing the national monthly bulletins; in this context, they will benefit from specialized trainings on data analysis, forecast and reporting (see Activity 3.2). During the considered period, the preparation of the regional monthly bulletins will continue to be ensured by FAO, as a neutral body receiving all national bulletins and Organization ensuring CCALM management in the coming years. [*Beneficiaries: all CCA countries*]
- **Annual Technical Workshops on Locusts in CCA** (five Workshops in total) allowing all countries to review and discuss: the previous locust campaign and the preparation of the next one; innovative approaches as well as a wide range of technical issues; the implementation of the activities during the past year and adoption of the workplan for the following one – thus also acting as Programme Steering Committee. In addition, as requested by several CCA countries, some neighbouring countries, in particular Iran, may be invited to participate as observers to the annual Technical Workshops. [*Beneficiaries: all CCA countries*]

#### *Activity 1.2. Support joint or cross-border surveys*

- **Joint and cross-border surveys (CBS)**, taking into account countries' requests for increased number and duration, to allow better joint monitoring of the locust situation in border areas. [*Beneficiaries: all CCA countries*]

#### *Activity 1.3. Organize country-to-country visits*

- **Country-to-country visits** may be organized between CCA countries with the following multiple objectives: consolidate and further extend the network of experts in CCA, thus contribute to develop regional cooperation; allow a better knowledge and understanding of locust management in neighbouring countries; facilitate information, experience sharing, including best practices, and lessons learning. Visits of two/three experts from a country to a neighbouring one could be envisaged, including meetings at the central level and participation in field activities. Several countries may also visit all together another CCA country. [*Beneficiaries: all CCA countries*]

#### *Activity 1.4. Identify the best long-term solution for sustainable regional cooperation*

- **Sustainable regional cooperation:** identify, refine, agree upon and implement the best possible mechanism to ensure long-term regional cooperation –i.e. the mechanism that appears the most appropriate for CCA countries at technical, institutional, financial and any other relevant levels. In this context, transfer of competencies within the region as well as, if possible, movements of teams and transfer of equipment from one country to another should also be envisaged in the future. [*Beneficiaries: all CCA countries*]

*Activity 1.5. Allow technical, programmatic, operational and financial project management and coordination within the whole Programme*

- Support to technical, programmatic, operational and financial project management and coordination is required to ensure its implementation in the framework of the “Programme to improve national and regional locust management in CCA”, including to have a consistent and streamlined action between all funding sources. The Programme and project are managed by the “Locusts and transboundary plant pests and diseases” (AGPMM) Team at FAO-headquarters under the overall supervision and the technical and scientific support of its Team Leader, in cooperation with the concerned sub-regional offices and country FAO Representations. The three main newly identified directions and project implementation will require human resource support for promoting them and organizing related activities at the regional and national levels. Support will thus be needed for project positions for the duration of the project, as follows: the Locust Programme Officer, AGPMM, based in FAO-headquarters, to ensure the management and coordination of the project implementation in close collaboration with all stakeholders and in the framework of the whole Programme<sup>3</sup>; and the Agricultural Officer, who will operate from Dushanbe, Tajikistan, to the benefit of Central Asian countries covered (under the Japan/JICA project). Based on the experience of the currently ongoing projects, support will also be needed for procurement and operational aspects and on an ad-hoc basis on specific needs. [*Beneficiaries: all CCA countries*]

## OUTPUT 2- National capacities strengthened

*Activity 2.1. Extend Training-of-Trainers (ToT) on locust management to all CCA countries*

- The **Training-of-Trainers (ToT) on locust management**, being recognized as a very positive experience in countries where it is almost completed (Afghanistan, Kyrgyzstan and Tajikistan), it is highly recommended to extend it to all CCA countries. This will allow teaching Master-Trainers (MTs) on the most important topics related to locust management as well as on delivering further training to other experts. This is a very powerful tool both to harmonize knowledge and promote world-wide recognized best practices as well as to train many experts, to the benefit of the concerned countries and the region as a whole. In addition, while world-wide transfer of knowledge has been ensured thanks to international high-level Experts external to CCA, trainers should be increasingly identified within the region and the **coaching formula between CCA Experts**, developed (as successfully recently tested).

The ToT should include regional, national and briefing sessions. Two **regional sessions** (five days each), organized to the benefit of the MTs, would concern locust monitoring and information management as well as locust spraying and pesticide risk reduction. The **national sessions** (five days each), delivered by the MTs to national Locust/Plant Protection Experts, would address the same topics (although ASDC could also be addressed separately). The **briefing sessions** (one or two days each), organized by the MTs for the spraying staff/local manpower specifically would concern locust spraying and pesticide risk reduction and should be organized at the start of the locust campaigns.

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<sup>3</sup> This includes: the preparation of annual workplans and budgets; the monitoring of all activities and expenditures; following the definition of the required technical profiles to implement the highly specialized scheduled activities, the preparation of the relevant terms of reference and the identification and recruitment of the high-level technical experts; the follow-up of the overall procurement process; the approval and monitoring of the execution of the Letters of Agreement (Contracts); the monitoring as well as the preparation or review of documentation, including documentation for the Training-of-Trainers, mission reports and activity reports; the coordination and consistent implementation of all activities carried out against the projects contributing to the “Programme to improve national and regional locust management in CCA”.



As this is a crucial activity to strengthening human capacities, such ToT should cover all CCA countries, which haven't benefitted from it yet. In addition, a **refresher course** should also be envisaged for the already trained MTs and then at the national level, two years after the initial regional and national sessions. [*Beneficiaries: all CCA countries, primarily those that haven't benefitted from the above training sessions*]

#### *Activity 2.2. Make available background documentation*

- The translation of the monographs on the CCA locust pests, from Russian into English, should be ensured since they are of interest for the overall scientific community and plant protection services of directly concerned countries (in particular Afghanistan for English version). More specifically, it is proposed that the project cover the translation of the **Monograph on the Italian Locust**, which is currently available in Russian only on the FAO website "Locust Watch in CCA"<sup>4</sup> as well as its print-out and dispatch [*Beneficiaries: all CCA countries*]
- **Practical Guidelines:** two Practical Guidelines (PG) are currently under preparation, on the three CCA locust pests and on pesticide risk reduction of locust control operations, and both will be available at least in Russian and English on the FAO website "Locust Watch in CCA". The guidelines on pesticide risk reduction of control operations will also be available in Dari, Kyrgyz and Tajik, printed-out and dispatched to the Plant Protection Services of these three countries (Japan/JICA project). It would be beneficial that the new project allow also the print-out and dispatch of such PG to the other CCA countries. In addition, to complete the series, additional Practical Guidelines could be prepared on up to four topics: survey; information management and forecast; control; and campaign management. [*Beneficiaries: all CCA countries*]

#### *Activity 2.3.a. Organize exposure visits on locust management*

- During the 2011-2016 period, all CCA countries have benefitted from an **internship/exposure visit** in a performing Anti-Locust Center outside CCA, including seven countries in the National Center for Locust Control (*Centre national de lutte antiacridienne* -CNLAA) of Morocco (all but Turkmenistan and Uzbekistan from CCA). Such internships were considered as extremely useful to provide an overview of the organization, management and functioning of such a Center applying the locust preventive control strategy, both as a single country and as a member of a region together with nine other countries. Additional internships could therefore be considered for Turkmenistan and Uzbekistan in the CNLAA. [*Beneficiaries: Turkmenistan and Uzbekistan*]

#### *Activity 2.3.b. Support post-graduate education/fellowships*

- Considering the need for high-level locust specialists, **post-graduate studies/fellowships** were inserted as an activity in the Programme with a view to enhance locust knowledge and management both at the national and regional levels. As a result, two fellowships are currently ongoing, a PhD on satellite images and GIS applied to locust monitoring (Kyrgyzstan, 2016/2018) and a Master on locust biological control (Uzbekistan, 2016/2018). Countries have requested to add one or two additional fellowships to be covered by the newly-envisaged project, i.e. two/three-year post-graduate studies on locust related issues in universities located in CCA or elsewhere to the benefit of one/two students from one/two of the six beneficiary countries (selection by an ad hoc E-Committee, following a call for interest, and

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<sup>4</sup> [http://www.fao.org/ag/locusts-CCA/common/ecg/1075/en/CIT\\_Monograph-DRAFT.pdf](http://www.fao.org/ag/locusts-CCA/common/ecg/1075/en/CIT_Monograph-DRAFT.pdf)



based on well-defined criteria, primarily the interest of the topic for the region as a whole)  
[Beneficiaries: a student(s) of one of the CCA country, as per selection]

#### Activity 2.4. Support applied research

- Another request from countries concerns **applied research**. This could include more precise identification and description of the hotspots of the three locust species, thus allowing to better target survey operations for an improved locust monitoring, as a basis for the locust preventive control strategy. Applied research on biological control had also been indicated (in particular by Uzbekistan) as a topic of interest and a number of other topics may also be considered, such as impact of Climate Change/Global Warning on locusts in CCA, the use of drones (whose images could be coupled with the locust GIS) for locust monitoring, etc.. One grant may be envisaged for applied research. A call for interest would be issued with clear selection criteria and an E-Committee (composed of independent experts from inside and outside CCA ensuring absence of conflict of interest) should be established to select the institute(s) and topic(s), which should be of interest for the whole region. [Beneficiaries: a institute of one of the CCA country, as per selection]

### OUTPUT 3- Locust issues and disasters better anticipated

#### Activity 3.1. Strengthen human and operational capacities for locust surveillance

- Strengthening **human capacities for locust monitoring**: in view of the progress made on locust monitoring but also of the disparities, which still exist between countries and the necessity to extend the knowledge gained by the trainees to all Locust Experts at the national level, more trainings do need to be carried out; this will be covered by the above-mentioned ToT (see above Activity 2.1). [Beneficiaries: all CCA countries]
- Strengthening **operational capacities for locust monitoring**: delivery of survey equipment would mainly concern **Afghanistan, Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan**, as per requests formulated by those countries and considering the importance to have the necessary equipment in order to conduct adequate survey operations, monitor the locust situation and analyse the related data, and anticipate outbreaks. The Caucasian countries have mentioned the need for new monitoring equipment, including mainly binoculars, Geographical Position System (GPS) devices, entomological kits and stereo-microscopes. Additional equipment for Afghanistan, Kyrgyzstan and Tajikistan would complete the assistance already provided under the Japan/JICA project. Uzbekistan has formulated reiterated requests for assistance over the past years, including GPS and entomological kits as well as transportation means for survey, i.e. motorcycles, vehicles and motor boats (the later for locust surveys in the Aral Sea area). [Beneficiaries: mainly Afghanistan, Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan]

#### Activity 3.2. Support introduction and operational use of monitoring and analyzing systems

Endowing CCA countries with modern tools for improving data collection, transmission, analysis, forecast and reporting is a key challenge for the coming years. A very important effort has been done since 2012 to develop such modern tools, which are now fully available. The next objective is that ASDC and CCALM be operationally used by most CCA countries. Strong technical support is required to that end, with a reasonable timeframe of five years. [Beneficiaries: all CCA countries]

- **Automated System for Data Collection - ASDC**: to facilitate collection and transmission of standardized field data through ASDC, support will be needed in terms of: (a) human

capacities for both adequate filling of the e-forms and correct use of the system by all national survey teams –which can be achieved thanks to the ToT (see above Activity 2.1); and (b) delivering the required equipment, i.e. tablets for ASDC use. This should cover all ten CCA countries (taking into account the devices already provided) as the regional approach is of outstanding importance for locust management in CCA.

- **Caucasus and Central Asia Locust Management System - CCALM:** the GIS, which testing has started from the 2017 locust campaigns, will have to be introduced in all CCA countries and its operational use at the national level supported. It will also need to be managed at the regional level. More specifically:
  - At the national level: **GIS introduction** would need to take place in all countries where it has not been done yet, i.e. in Kazakhstan, Uzbekistan and Turkmenistan, with the assistance of the International Consultant, GIS Expert. As already mentioned, in all CCA countries, two **Information Officers** will have to be designated (against national budgets) for managing the GIS. They will need to benefit from specialized **trainings on data validation (ASDC), analysis, forecast and reporting** as well as **CCALM maintenance and use**. In this regard, based on the experience gained with Desert Locust management, it is highly recommended that such specialized training/refreshers course be organized on a yearly basis (i.e. five regional trainings in total) for all CCA Information Liaison Officers. This will allow experience exchange, network creation and problem solving and, *in fine*, enhancing analysis, forecast and reporting national and regional capacities for improved locust management.
  - At the regional level: support is needed for **regional management** of CCALM, which will be hosted in FAO, at least for the coming years. More specifically, human resource will be required to manage CCALM: this could become part of the tasks of the Agricultural Officer position covered by the Japan/JICA project (see Activity 1.4) subject to a specific training of about two months. Advantage will be taken of the experience of more than 40 years of the “Desert Locust Information Service” (DLIS), AGPMM, at FAO-headquarter. The DLIS operates an early warning system for the Desert Locust and produces monthly regional bulletins and forecasts for each country as well as warnings and alerts on significant developments (analysis being carried out by the national control locust units and the DLIS, relying on a range of computer-based software tools developed by FAO and partners). This experience will be highly beneficial for knowledge transfer to manage the locust GIS in CCA. Support will also be needed to **improve the system** itself, which will be ensured by the FAO Information Technology Division, as part of a normal process when CCALM will be operationally used.

While the system will be initially hosted in FAO, discussions should also take place on its use in the long run and therefore linked to the mechanism to be adopted for long-term regional cooperation (see Activity 1.3).

### *Activity 3.3. Enhance preparedness for locust risk management through harmonized national contingency plans*

- Following the introduction of the contingency planning approach for locust management (October 2015), it would be recommended that as a pilot activity, one or more country(ies) prepare with FAO assistance a national **contingency plan**, based on the proposed canvas and share lessons learnt with the other CCA countries during the following annual Technical Workshop. [*Suggested Beneficiaries: Kyrgyzstan or Tajikistan*]

## OUTPUT 4- Improved responses to locust outbreaks

### *Activity 4.1. Strengthen human and operational capacities for locust control*

- In addition to strengthening human capacities for locust control thanks to the above-mentioned ToT (see above Activity 2.1), **on-the-job training of young mechanics/technicians** is strongly suggested to ensure the proper maintenance, calibration and functioning of Ultra-Low Volume (ULV) sprayers in the countries, which have an important quantity of such equipment or are increasingly using the ULV technology. The concerned CCA countries are Afghanistan, Kyrgyzstan and Tajikistan, which have been provided with ULV sprayers thanks to the ongoing Japan/JICA funded project, as well as Georgia, Azerbaijan and Turkmenistan, where the ULV technology is either mostly or increasingly used. Such training could be conducted in countries having a long experience in locust control with ULV equipment, such as Morocco. [*Suggested Beneficiaries: Afghanistan, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan*]
- Strengthening **operational capacities for locust control** would mainly concern 1) **Afghanistan, Kyrgyzstan and Tajikistan** as per requests formulated by those countries and with a view to complete the assistance already provided; 2) **Uzbekistan**, based on the reiterated requests from this country; and 3) **Azerbaijan and Georgia**. Equipment to be delivered would primarily include vehicles/tractors for control operations, sprayers, water trucks and camping kits. [*Beneficiaries: Afghanistan, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan and Uzbekistan*]

### *Activity 4.2. Promote less harmful pesticides and alternatives to conventional pesticides*

- The work of the **E-Committee on pesticides in CCA** (dating 2012) needs to be updated in order to make available a recent picture of the active ingredients/pesticides both registered and frequently used against locusts in CCA and if necessary to update the minimum list of pesticides to be registered at the national level<sup>5</sup>, taking into account the findings of the 10<sup>th</sup> meeting of the Pesticide Referee Group (PRG) held on 10-12 December 2014 in Tunis, Tunisia<sup>6</sup>. The overall objective is to support the registration of efficient but less harmful pesticides (see also next points) in CCA countries. [*Beneficiaries: all CCA countries*]
- The **ULV technology** has been widely presented and promoted during the 2011-2016 period; this resulted in very good progress with now at least eight of the ten CCA countries using it (in addition to water-based formulations such as the Emulsionable Concentrate –EC- technology). The use of the ULV technology should be further advocated at various levels: registration of pesticides in ULV formulation; promotion targeting decision-makers (including by developing easily understandable cost-benefit assessments of various control options, including EC vs ULV spraying but also full cover vs barrier treatment and chemical pesticides vs more friendly alternatives); training of all control agents involved in ULV spraying (under the ToT- see Activity 2.1); as well as delivery of related equipment when needed (see Activity 4.1). In addition to the work of the E-Committee and the advocacy video on ULV technology already prepared by FAO, the project may therefore support the preparation of related advocacy material. [*Beneficiaries: all CCA countries*]
- Further attention also needs to be paid to alternatives to conventional chemical pesticides for full-cover (blanket) spraying. In particular, the use of **Insect Growth Regulators (IGRs)**, which

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<sup>5</sup> [http://www.fao.org/ag/locusts-CCA/common/ecg/1013/en/Report\\_E-Committee\\_Pesticides\\_Final\\_EN.pdf](http://www.fao.org/ag/locusts-CCA/common/ecg/1013/en/Report_E-Committee_Pesticides_Final_EN.pdf)

<sup>6</sup> <http://www.fao.org/ag/locusts-CCA/en/1013/index.html>

are registered in at least eight CCA countries<sup>7</sup>, should be advocated and supported. IGRs interfere with the moulting process and therefore have a lethal action against hoppers only and after two successive moults. They allow controlling quickly (barrier treatment technique<sup>8</sup>) and at a lower cost huge areas infested by hopper groups and bands up to medium instar. Because of their mode of action and related spraying technique to apply them, they have a lower impact on human health and the environment than conventional pesticides. Promotion of IGRs could be done through the preparation of videos on their use (tutorial) as well as on cost-benefit comparison between barrier and blanket treatments. [*Beneficiaries: all CCA countries*]

- The topic of **biopesticides** should be covered by the ToT (see Activity 2.1); the existing videos on biopesticides' advocacy and use should be displayed and widely distributed for further awareness and demonstration purposes at the national level, with the objective of facilitating their inclusion in the national list of registered pesticides as well as their operational use. In addition, it is suggested to organize a field trial/demonstration on biopesticides' use, relying on the Uzbek Research Institute for Plant Protection (Locust Research Laboratory) to the benefit of all CCA countries. That would allow showing how to mix and spray the biopesticides and how to monitor their effectiveness in the field and in cages; this could be followed by comparison with methodology applied and results obtained with various chemical pesticides against various locust species at different development stages, including concerning impact on human health and the environment. Such activity could be coupled with the ToT. [*Beneficiaries: all CCA countries, with demonstration on biopesticide use conducted in Uzbekistan*]

## OUTPUT 5- Impact on human health and the environment mitigated and monitored

### *Activity 5.1. Mitigate impact of locust control operations on human health and the environment*

In addition to a number of activities, which contribute to reduce human health and environmental impact of locust operations and are proposed under the above results, the following could be envisaged:

- Strengthening **human capacities**: attention paid to human health and the environment is unequal among the countries although this is a very important aspect of locust management. Therefore related human capacities need to be developed in all CCA countries, which can be done in the framework of the ToT (this topic is fully part of the envisaged sessions - see Activity 2.1) in addition to the other activities below-mentioned. [*Beneficiaries: all CCA countries*]
- Strengthening **operational capacities**: Personal Protective Equipment (PPE) should be supplied together with any control equipment delivered to CCA countries; the systematic use of PPE by staff involved in locust control operations and pesticide management needs indeed to continue to be supported with a view to enhance attention paid to human health protection [*Beneficiaries: CCA countries to which control equipment is provided*]
- **Facilitate pesticides and empty containers management, incl. pilot activity on empty containers**: on one hand, Practical Guidelines on locust control and pesticide risk reduction (see Activity 2.2) will provide best practice cards on related topics. On the other hand, it is proposed (based on the recommendations of the related review conducted in 2016) to

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<sup>7</sup> As per Report of the E-Committee on pesticides, FAO, 2012.

<sup>8</sup> One sprayed strip (whose size depends on the control platform) every five unsprayed.

develop and implement an action plan on the management of empty containers used for locust control in one pilot country. Such a pilot activity is important as it allows testing or demonstrating the positive outcome of valuable approaches within the region, which can then be replicated in other countries. *[Beneficiaries: all CCA countries, with Kyrgyzstan as pilot one]*

- **Extension material for staff and for local populations:** experience gained in other geographical areas and for other locust pests together with the minimum list of information to be included in extension products (prepared in 2016) could be used by the project to support preparation of extension material (posters, booklets, etc.) to the benefit of staff and local populations in CCA (at least in English and Russian and possibly also in national languages). *[Beneficiaries: all CCA countries]*

#### *Activity 5.2. Monitor impact of locust control operations on human health and the environment*

- The successful pilot activity aiming at developing a **national system for environmental and health monitoring of locust control** conducted in Tajikistan and Kyrgyzstan in 2014/15 arouses interest of several countries, was replicated in Azerbaijan in 2017 and should be extended to as many as possible other CCA countries. This concretely means assistance by a high-level Environmental Expert in order to review the existing situation on locust control impact monitoring and, on this basis, formulate targeted recommendations based on international standards and country needs as well as develop a number of tools immediately useable. The project could cover such important activity in two to four additional countries. *[Beneficiaries: two additional CCA countries, to be identified based on interest and request]*
- The setting up of **Human Health and Environmental Monitoring Teams** independent from control teams was a very successful outcome of the previous pilot activity in Kyrgyzstan and Tajikistan (it is also planned in Azerbaijan from the 2018 locust campaign onwards). In parallel to their further reinforcement in these three countries, the experience could be extended elsewhere, as recommended as part of the national system for environmental and health monitoring of locust control. Technical and operational assistance is required to that end. *[Beneficiaries: Azerbaijan, Kyrgyzstan and Tajikistan as well as two to four additional CCA countries – linked with previous activity]*
- **Pesticide residue analysis and impact assessment:** such analysis should be conducted in order to establish realistic crop pre-harvest intervals and livestock withholding periods for the insecticides used for locust control in CCA, i.e. ensuring residue levels that do not pose risks to human and animal health. While this could not be successfully carried out in the toxicology laboratory of Bishkek, Kyrgyzstan (2017), investigations need to be carried out to identify adequate laboratory(ies) –able to conduct such analysis as per international standards- either within or outside the region. *[Beneficiaries: all CCA countries]*

#### OUTPUT 6- Public information and awareness increased

##### *Activity 6.1. Develop awareness among local populations*

- Local populations, including children, should be better informed on locust features as well as on risks related to pesticides and control operations in order to allow them: (a) identifying locust pests; (b) timely indicating locust presence to the relevant authorities; and (c) adopting precautionary measures before, during and after control operations such as absence from areas under treatments, withholding and re-entry periods, no re-use of empty pesticide containers, etc. This can be achieved through production of documentation (such as posters

and leaflets) in English, Russian and national languages, and further despatch to local populations and schools. Sensitization of populations will also be ensured through mass-media and other available means, such as local meetings and announcements, etc.  
*[Beneficiaries: all CCA countries]*

Activity 6.2. *Enhance* visibility of locust issues to promote regional cooperation and improved management

- It is suggested to take advantage of all above described activities to advocate for high-level support within concerned countries, with the objectives to promote and sustain regional cooperation as well as introduce modern tools. This is thus a cross-cutting activity. Advocacy material may also be prepared to that end in addition to products already above-listed.  
*[Beneficiaries: all CCA countries]*