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Agriculture Modernization Project

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Ministry of Agriculture
கமத்தொழில் அமைச்சு

Environmental Screening Report

Strengthening Laboratory Facilities for Chili and Maize Hybrid Genetic Material Development, Multifaction of Parental Materials, and Increasing Basic Seed Production

Project Management Unit

Agriculture Sector Modernization Project

January 2022

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ABBREVIATIONS

AI	Agriculture Instructor
ASMP	Agriculture Sector Modernization Project
ASC	Agrarian Service Center
ATDP	Agricultural Technology Demonstration Park
CBO	Community-Based Organization
DSD	Divisional Secretary Division
EMF	Environmental Management Framework
EMP	Environmental Management Plan
ESR	Environmental Screening Report
FO	Farmers Organization
FPO	Farmers' Production Organization
GAP	Good Agricultural Practices
GND	Grama Niladhari Division
GoSL	Government of Sri Lanka
IDA	International Development Association
IEE	Initial Environmental Examination
IPM	Integrated Pest Management
LGA	Local Government Authority
MOA	Ministry of Agriculture
MOPI	Ministry of Primary Industries
NIRP	National Involuntary Resettlement Policy
NGO	Non-Governmental Organization
OP	Operational Policy
PAP	Project Affected Persons
PCR	Physical Cultural Resources
PMP	Pest Management Plan
PMU	Project Management Unit
SLRs	Sri Lanka Rupees

ENVIRONMENTAL SCREENING REPORT (ESR)

A. THE PROJECT IDENTIFICATION

Project Title	Strengthening Laboratory Facilities for Chili and Maize Hybrid Genetic Material Development, Multifaction of Parental Materials, and Increasing Basic Seed Production
Project Proponent	Agriculture Sector Modernization Project (ASMP)
Purpose and scope of ESR	The purpose of the ESR is to provide viable mitigation measures against all identified environmental impacts during the screening process of the subproject. This ESR includes the basic information of the subproject, justification of the subproject selection, anticipated impact, and environmental condition of the subproject area, and stakeholder consultations and concerns on subproject identification, designing, and implementation, the implementation plan of the viable mitigation measures against the identified environmental impacts.

B. PROJECT LOCATION

Location	The subproject's activities will be mainly implemented in 3 different locations. They are; 1. Field Crops Research and Development Institute, Mahailuppallama- The institute is located at Mahailuppallama 35 km south of Anuradhapura city in Ipalogama DSD of Anuradhapura district in the North Central Province 2. Regional Agriculture Research and Development Centre, Kilinochchi- The institute is located in Karachchi DS division of Kilinochchi district near to Iranamadu junction bounded to A9 road in the Northern Province 3. Regional Agriculture Research and Development Centre, Aralaganwila- The institute is located at Aralaganwila 33 km east of Polonnaruwa city in Dimbulagala DS division of Polonnaruwa district of the North Central Province Under this subproject, strengthening the research and laboratory facilities of the above research stations will be implemented. The location maps are annexed as Annex 1.

Location (Google Map)

1. Mahailuppallama
   $8^0$06’42.21” N
   $80^0$28’01.26” E

2. Kilinochchi
   $9^0$20’39.48” N
   $80^0$24’33.66” E

3. Aralaganwila
   $7^0$47’25.62” N
   $81^0$09’35.06” E

1. Field Crops Research & Development Institute (FCRDI)- Mahailuppallama

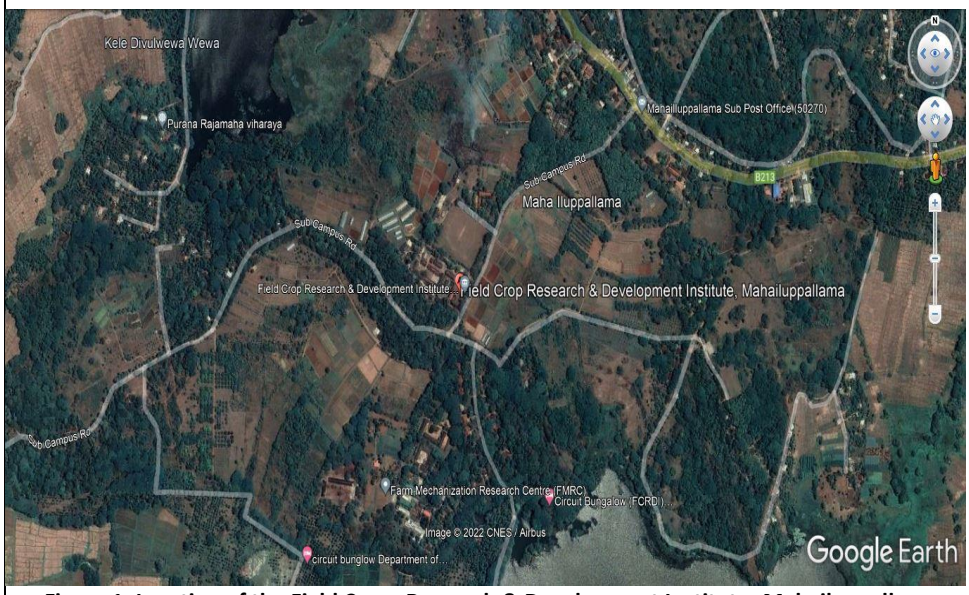


Figure 1: Location of the Field Crops Research & Development Institute- Mahailuppallama

2. Regional Agriculture Research and Development Centre, Kilinochchi

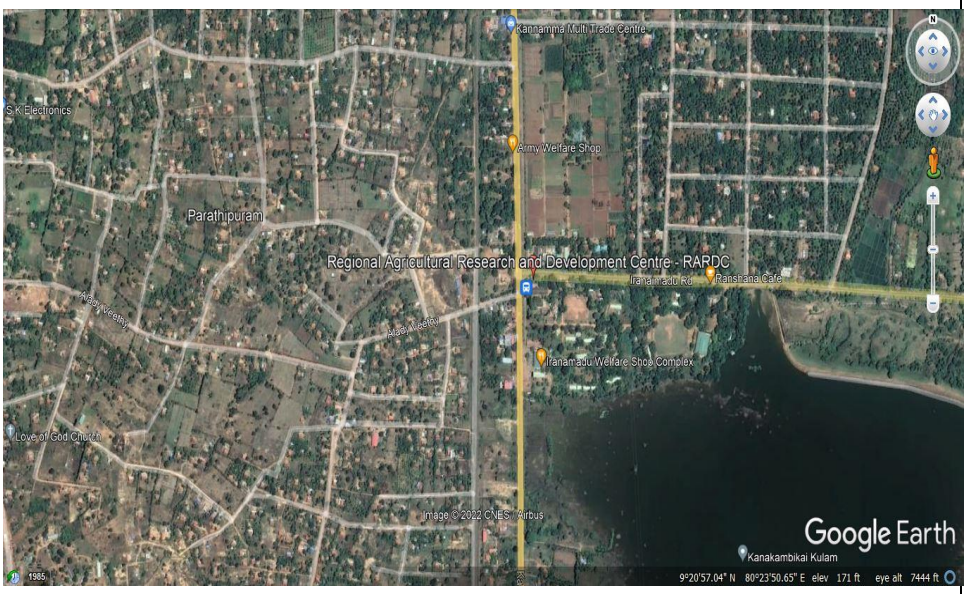
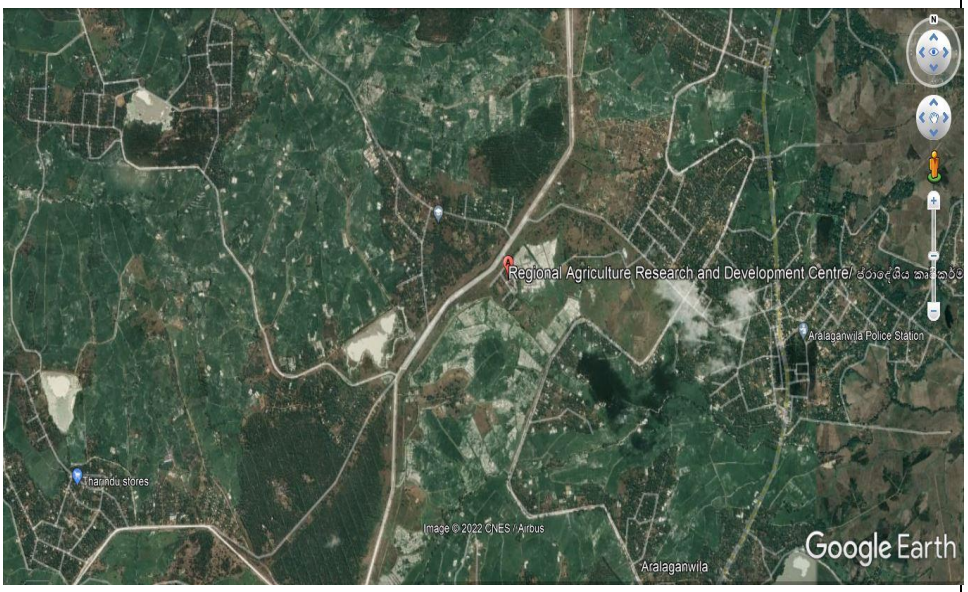


Figure 2: Location of the Regional Agriculture Research Centre- Kilinochchi

	3. Regional Agriculture Research and Development Centre, Aralaganwila  **Figure 3: Location of the Regional Agriculture Research Centre- Aralaganwila**
Definition of Project Area *(The geographical extent of the project & areas affected during construction)*	***1. Filed Crop Research and Development Institute (FCRDI) - Mahailuppallama*** The research history of Mahailluppallama dates back to the year 1903 in which field experiments were initiated aiming to identify suitable economic crops for dry zone rainfed conditions. Cotton, Sisal, Tobacco, and Groundnut were given more emphasis, however, remoteness and other difficulties led to the close down of the research station in 1919. Research Programmes were then operated at Vavuniya and Anuradhapura (1926), Kurundakulama (1938), Relapanawa, Olukaranda and Makalanagama (1949). In 1950 a fully equipped research station was established at Mahailluppallama and many research findings have been reported since then. The station was renamed as Field Crops Research and Development Institute in 1994 and entrusted the responsibility of conducting research programs on field crops There are nine (9) main divisions and six (6) subdivisions come under FCRDI 1. Plant Breeding Divisions Chili Coarse grains Onion Soybean & Cowpea Mungbean & Blackgram Vegetables 2. Agronomy Division 3. Soil & Water Management Division 4. Soil Science Division 5. Biotechnology Division 6. Entomology Division 7. Plant Pathology Division

8. Weed Science Division
9. Horticulture Division.

Figure 4: Field Crop Research and Development Institute- Mahailuppallama

3. Regional Agriculture Research and Development Centre, Kilinochchi

The Regional Agriculture Research and Development Centre (RARDC), Kilinochchi was established in the early 1980s and its mandate is to include its satellite stations located at Vavuniya, Thirunelvely, and Mullaitivu (re-establishing) and to conduct agricultural research and development activities especially on other field crops which are economically important for the Northern region, to cater to the needs of farmers in that region.

RARDC, Kilinochchi is affiliated to the FCRDI, Mahalluppallama. Multi-disciplinary research and development activities have been conducted at the Centre. Planning and implementing research on Agriculture crops based on the farmer needs to develop technical packages for solving demands of Northern (five districts- Jaffna, Kilinochchi, Mannar, Mullaitivu, and Vavuniya) Regional farmers and to increase production and quality of Agricultural producers to attend self-sufficiency and commercial purpose.

There are seven (7) subunits that come under the heading of Regional Agriculture Research and Development Centre – Kilinochchi,

1. Plant Breeding: Developing new plant varieties suitable for dry and intermediate zones of Sri Lanka. Changing the traits of plants to produce desired characteristics.
2. Plant Pathology: Evaluation of disease samples collected from research and farmers' fields. Detect the causal organism and suggest the possible solution to control the disease. Evaluation and efficacy of bio-control agents for pathogens.
3. Plant Entomology: Management of insect pests of field, fruit, and OFCs. Deliver effective solutions using integrated pest management strategies.
4. Breeder Seed Production
5. Soil and Agronomy
6. Organic Agriculture

7. Sales Unit

Figure 5: Regional Agriculture Research and Development Centre, Kilinochchi

3. Regional Agriculture Research and Development Centre, Aralaganwila

The Regional Agriculture Research and Development Centre, Aralaganwila was established in 1982 to serve the research needs for the agricultural development of Mahaweli system B. With the restructuring of the department of agriculture in 1993, this center was brought under Field Crop Research and Development Institute, Mahailupallama, and given the responsibility to work on research and development of field crops.

- Present mandated areas are Polonnaruwa, Ampara, Batticaloa and Trincomalee, Interprovincial areas of Hasalaka, Mahiyangana & Mahaweli System B, C, D, G
- This Centre is working on Research and development activities related to field crops and regionally important crops or rice, and vegetables also.
- This station act as the agriculture-related training provider to officer, training school children in the region

There is a farm division and eight (8) sub divisions come under RARDC Aralaganwila.

- Plant Breeding Division
- Horticulture Division
- Soil Science Division
- Agronomy Division
- Water Management Division
- Entomology Division
- Pathology Division
- Rice Research & Weed Science Division

	 **Figure 6: Regional Agriculture Research and Development Centre, Aralaganwila**
Adjacent land and features	The total land extent under FCRDI- Mahailuppalama is about 360ha (890 acres) and it includes research station buildings, staff quarters, and cultivation area. The area where FCRDI is located belongs to Ipologama DS division of the Anuradhapura district in North Central Province. The area belongs to the low country dry zone. This research station mainly aims at development of the field crops since the major portion of the field crop production is generated by the low country dry zone of Sri Lanka. The institute is aiming at developing new technology and facilitating the technology dissemination for enhancement of production and productivity in the field crop sector. Field crops include condiments (chili and onions), grain legumes (mungbean, cowpea, black gram, pigeon pea, and chickpea), oilseed crops (groundnut, soybean, sesame, and sunflower) and non-rice cereals (maize, sorghum, finger millet, and other millets). There are no privately owned lands adjacent to FCRDI but it is surrounded by many government institutions. They are; • Government Seed and Planting Material Production Farm- Mahailuppallama • Seed Certification Service- Regional Office • Seed Certification Laboratory • Plant Protection Service Office • Farm Mechanization Research Center- Mahailuppallama • In-Service Training Institute, Department of Agriculture, Mahailuppallama • Veterinary Office • Mahailuppallama Sub Campus (Dry Zone - Teaching, Research, and Outreach) • Mahaweli Block Manager's Office • Mahaweli Community Radio • A Primary Medical Care Unit The total land extent under purview of RARDC-Kilinochchi is currently about 10 ha (25 acres) and before the civil war, it was about 30 ha (76 acre). This center carries out the research works especially focused to northern part (Jaffna, Kilinochchi, Mannar, Mullaitivu, and Vavuniya districts) of the country but it doesn't limit its services to the respective districts and they have extended their services to the eastern part (Trincomalee and Batticaloa districts).

	This center is surrounded by the private farmlands. Generally, vegetables, red onion, groundnut, chili and rice are the mostly grown crops in the private farmlands. Farmers receive the water to irrigate their crops from Iranamadu tank that is located in the vicinity of the RARDC. This center is surrounded by the private farmlands. Generally, vegetables, red onion, groundnut, chili and rice are the mostly grown crops in the private farmlands. Farmers receive the water to irrigate their crops from the Iranamadu tank that is located at the vicinity of the RARDC. The total land extent under purview of RARDC- Aralaganwila is about 120 ha (300 acres). RARDC, Aralaganwila has responsibilities to develop relevant technologies and putting them in to practice in the mandated regions of the Mahaweli Systems B, C, D & G, Eastern province, and inter-provincial areas. Other than the regional programs, the center collaborates in the nationally coordinated research and development activities. Though, the center administratively responsible for research and development activities of Other Field Crops, it deals with rice as well as fruits and vegetables considerably. The research program is executed under different disciplines such as Agronomy, Entomology, Genetics and Plant Breeding, Plant Pathology, Horticulture and Soil & Water Management. RARDC-Aralaganwila is surrounded by the private farmlands that are belongs to low country dry zone. The irrigation supply for the farmlands is well established since they are located within the Mahaweli system.

C. PROJECT JUSTIFICATION

Need for the project (What problem is the project going to solve	The development objectives of Agriculture Sector Modernization Project for Sri Lanka are to support increasing agriculture productivity, improving market access, and enhancing the value addition of smallholder farmers and agribusinesses in the project areas. Up to now, ASMP has launched its activities in nine districts of seven provinces of the country. Project Management Unit (PMU) and Provincial Project Management (PPMUs) directly implement the two kinds of subproject activities that mainly consists with Productivity Enhancement and Diversification Demonstrations and the infrastructure development programs. The Department of Agriculture (DOA) acts as the main project partner agency of Productivity Enhancement and Diversification Demonstrations. DOA's activities consists with designing of subprojects, training farmers, monitoring subprojects' activities and involving the troubleshooting of the program. The agricultural research stations play remarkable role in ASMP's activities by providing technical inputs, and introducing new hybrid varieties to the farmers. Further, analyzing soil & crop samples of the farmers and giving recommendations for the fertilizer usage, and investigating pest and disease attacks of the crops and giving viable mitigation measures to overcome the issues timely are

	services provided by the agricultural research stations. The services of the research stations have extended to increase productivity and profitability of other field crops (OFC) farming, make available quality produces and resource conservation, and eco-friendly OFC farming. The main objective of the research and the development activities of these research station are; • To make available demanding OFC varieties for stakeholders • To make available associated technologies for high productivity, profitability, and sustainability with an emphasis on climate change mitigation/adaptation/escape • To minimize post-harvest losses and enhance value addition • To assure the availability of quality seeds for stakeholders The conventional farming techniques and the field crops varieties are not enough to produce the country food requirement. A major portion of the field crops production except locally grown vegetables are imported to the country to cater the existing demand. This situation makes burdens to the country, one is it threats on the food security and importation of the field crops production requires high foreign exchange while it directly effects on the country's economy. Hence, producing of hybrid crop varieties that are giving high yielding and continues research activities pertaining to the field crop production is essential to ensure the production. The need of this subproject emphasizes that productive enhancement and diversification of two main crops (Chili and Maize) that are implemented under ASMP. These two crops have potential benefits to the country economy. Chili is one of the most important cash crops grown in Sri Lanka and an essential condiment. In 2019, Sri Lanka produced 75,000 t of green chili, meeting about 95% of the national requirement. However, the total requirement for Dry Chili is imported approximately 50,000 t per annum. The national average yield of green chili was stagnated at 4.7 t/ha until the recent past, which could be boosted to 20 t/ha with the introduction of locally-developed Chili hybrids which are moderately resistant to LCC and with associated precision farming technologies. The chili hybrids, MICH HY 01 and MICH HY 02 have the yield potential of over 35 t/ha of green chili. But the limited production of hybrid Chili seeds, fulfilling less than 25% of the demand, is the major constraint to expanding its cultivation, which is about 2,000 kg per annum at present. Hence, about 15,000 ha Chili cultivation is still under open-pollinated varieties (OPV). Current efforts by the DOA in collaboration with the farmer organizations, foreign-funded projects, and the private sector to produce Chili hybrid seeds need to be expanded to achieve self-sufficiency in both green and dry chili production. More than 10,000 ha of hybrid Chili cultivation and 8,000 ha of OPV as commercial cultivation as well as a home garden crop is required to meet the demand for green and dry Chili. Hence, the annual hybrid Chili seeds requirement is 6,500 kg.

	Hence, efforts to strengthen the capacity of seed production of locally developed Chili hybrids at a reasonable price are timely. Maize is the second-largest cereal extent in Sri Lanka, next to rice. Mainly used for animal feed (80% of the production) and the rest is used in the confectionery industry. A low percentage of maize is harvested at the green cob stage for direct consumption as boiled cobs, while the whole maize plants are harvested as fodder for the dairy industry. The demand for maize grains increased over the years and was about 500,000 t in 2019. However, the local production was 391,000 t in 2019 and the rest is imported. Farmers have gradually shifted to the cultivation of hybrid seeds during the last two decades, thus, increasing national productivity. More than 95% of farmers are growing hybrids at present, but about 95% of the total seed requirement is fulfilled by imported maize hybrids. The DOA recently released new maize hybrids i.e., MI Maize HY 3, MI Maize HY 4, and MI Maize HY 5, and these hybrids, are comparable in yields with most of the imported hybrids and moderately resistant to drought. These locally developed hybrids are well adapted to rainfed upland ecosystems in the Dry zone where major maize-growing areas are located. The total hybrid seed requirement is about 1,200– 1,500 tons per annum. The local maize hybrid seed production, a very limited quantity, is still confined to the government sector. With the inadequacy of local production, the price of imported hybrids is increasing annually making them unaffordable to most farmers. Therefore, interventions through public-private-producer partnership to enhance seed production of locally-developed hybrid maize varieties at least to meet at least 25% of the seed demand is essential and timely. But existing research and laboratory facilities of the stations are not enough the cater to the farmers and the country requirements. Strengthening infrastructure and Technological/Technical capacities of the Department of Agriculture is an essential need to ensure provision services and follow-up support for the farmer production organization (FPOs) established under Component 2 of the ASMP. This is further to the basic field facilities established for basic seed production of chili and maize (FIELD CROPS CENTER), vegetables including potato vegetable CENTER), and the fruit crops (FRUIT Center), which the centers of excellence of the relevant crop categories established at Mahailuppallama (including Kilinochchi and Aralaganiwila), Gannoruwa/Kundasale/Dondagolla/Seetha Eliya Complex, and Horana, respectively. Enhancing the research and laboratory facilities of FCRDI-Mahailuppallama, RARDC- Kilinochchi and RARDC- Aralaganwila will be a sustainable solution for the continuing of modern technologies that are introduced to the farmers by ASMP. Hence, ASMP proposes to enhance the laboratory facilities of the above stations. Therefore, launching of capacity building program to enhance the research and laboratory facilities of the field crops research stations is an

	essential and mandatory requirement of the agriculture sector modernization.
Purpose of the project (*What is going to be achieved by carrying out the project*)	The project will directly result the enhancements of laboratory facilities at FCRDI- Mahailuppallama, RARDC- Kilinochchi and RARDC- Aralaganwila. Ultimately, it gives the benefits to the farmers who have engaged in field crop cultivation in the country. The following purposes will be achieved by implementing the subproject. • Improving the laboratory and other related technological and technical capacities of the three Centers of Excellence is imperative to achieve the objectives of the ASMP, especially in terms of sustainability through continuous interventions. • Providing continuous technical and technological such as soil testing, issuance of site-specific fertilizer recommendations, the introduction of new varieties suitable for different agro-ecological regions including their management packages to the farming communities in the project areas during and after completion of the ASMP. • Providing technical support to the farmers to improve crop productivity, especially in the established SL-GAP farms through the services provided by the Centers of Excellence and the Extension and Training arms of the DOA, Provincial Departments of Agriculture, and the Mahaweli Authority of Sri Lanka. • Field quality assurance by auditing and issuing of SL-GAP certificate to the GAP farms established through the involvement of the Centers of Excellence and with the assistance of the Seed Certification Service in the DOA, which regulates the auditing of SL-GAP farms. • Support the establishment of productive model farms, including GAP Model Farms, in the project sites through technological intervention from the Centers of Excellence, including the production of Orange, Pineapple, Guava, Passion fruit, and Banana. • Continuous laboratory monitoring programs to be carried out island-wide on pesticide residues, contaminants, and pollutants in the agriculture environment comprise of food, soil, and water and monitoring programs for periodic assessment of toxicity of pesticides to pests, natural enemies, and beneficial organisms for maintaining the sustainability of model farms The ultimate effort of the ASMP is to establish good agriculture practices (GAP) in the farming activities by introducing new technologies.
Alternatives considered (*Different ways to meet the project*	The existing agricultural field crops laboratory services of the government sector are half fulfilled the country's requirement. Even though there is private sector involvement, their services are very narrow and are limited to their own needs only. Hence, there is a gap to

need and achieve the project purpose)	be filled and the government sector involvement is essential. The agriculture sector keeps trust in the government sector service since there is trustworthy service and DOA has improved human capital to deliver the service. Therefore, ASMP together with DOA have identified the need for a subproject and decided to enhance the laboratory services through the capacity building program. There is no alternative to be considered since there is well established system in the sector.

D. PROJECT DESCRIPTION

Proposed Start Date (Duration)	March 2022 (02 Months)
Proposed completion Date	April 2022
Estimated total cost	SLRs 65.0 Mn
Present Land Ownership	FCRDI-Mahailuppallama, RARDC- Kilinochchi, and RARDC- Aralaganwila are located on the state land that is under the purview of the DOA.
Description of the Project (*With supporting material such as maps, drawings etc. attached as required*)	This subproject is mainly focusing to purchase and supply the equipment that needs to strengthen the research facilities at FCRDI-Mahailuppallama and upgrade the laboratory facilities at FCRDI-Mahailuppallama, RARDC- Kilinochchi, and RARDC- Aralaganwila. **For strengthening research facilities at FCRDI- Mahailuppallama** • Data management & mapping unit for EM38-MK2 electromagnetic induction meter (1 unit) • PAGE operator - large samples (1 unit) • Refrigerated centrifuge: -20 °C (1 unit) • Drone with Sensors and Software for insect pest, weeds and disease scouting and mapping (1 complete set) • Redox meter (1 unit) • Automated colony counter (1 unit) • Phenotype micro arrays for microbial cells (2 units) • Disease test kits for on-field disease identification (1 unit) • Portable microscopes for field inspections (2 units) • Compound light microscope with digital imaging system (1 unit) **For strengthening laboratory facilities at FCRDI- Mahailuppallama** • Flame Photometer – analysis of Na and K (1 unit) • Water bath – digestion of samples (open bath) (1 unit) • Fully automated Kjeldhal system – Nitrogen analysis (1 unit) • Water purification unit – making distilled water (1 unit) • pH Meter - measuring acidity/baseness of samples (1 unit)

	• Analytical Balance – weighing the samples (1 unit) • Top Pan Balance – weighing the samples • Ion meter with selective electrodes - To determine ionic species in water and extracts **For strengthening laboratory facilities at RARDC- Kilinochchi** • Upright Phase Contrast Microscope with digital mapping (1 unit) • Table top laboratory Ice Maker (1 unit) • pH meter (Bench top) (1 unit) • EC Meter (1 unit) • Water purification unit – making distilled water (1 unit) **For strengthening laboratory facilities at RARDC- Aralaganwila** • Flame Photometer – Analysis of Na and K • Water purification unit – making distilled water • pH conductivity meter (1 unit) • Soil moisture sensors: Profile Probe The sub-activities with the cost allocation under the subproject are presented in Annex 2.
Project Management Team	A Project Management Unit (PMU) has been established under the Ministry of Agriculture to implement the proposed project activities. Contact Persons: **Project Director** Agriculture Sector Modernization Project Ministry of Agriculture No. 123/2 Pannipitiya Road, Battaramulla Tel: +94 112 877 550, Fax: +94 112 877 546 Email: projectdirectorasmp2@hotmail.com Web: https://www.asmp.lk/ **Environmental and Social Safeguards Specialist** Agriculture Sector Modernization Project Ministry of Agriculture No. 123/2 Pannipitiya Road, Battaramulla Tel: +94 112 877 550, Fax: +94 112 877 546 Email: sanjayadms@hotmail.com Web: https://www.asmp.lk/ **Nature of Consultations and Inputs Received** Consultations with Environmental and Social Safeguard Specialist/ PMU and field visits to the project site.

F. DESCRIPTION OF PROPOSED SUBPROJECT ACTIVITIES

1. Supplying Equipment to the Laboratories of three Research Stations

Existing Condition of the Facilities	There are nine (9) main divisions and six (6) subdivisions that come under FCRDI- Mahailuppallama. Each division has laboratory facilities within the premises and research activities have been undertaken by the well-experienced & qualified research staff that consists of Director, Additional Director (Research), Deputy Director (Research), Assistant Directors Agriculture (Research), Research Assistants, and Technical Assistants. As the main research divisions, there are 1. Plant Breeding Division that consists of the subdivisions categorized as (i) Chili, (ii) Coarse Grains, (iii) Onion, (iv) Soybean & Cowpea, (v) Mungbean & Blackgram and (vi) Vegetables, (2) Agronomy Division, (3) Soil & Water Management Division, (4) Soil Science Division, (5) Biotechnology Division, (6) Entomology Division, (7) Plant Pathology Division, (8) Weed Science Division and (9) Horticulture Division. Apart from these research divisions, FCRDI- Mahailuppallama has six (6) laboratory facilities that have been established to conduct research and experiments. Bio-Technology, Entomology & Plant Pathology, Soil Science, Breeding, Agronomy and Soil & Water Management are the main laboratories that help to FCRDI activities. There are seven (6) research units that come under the heading of RARDC-Kilinochchi. They are; 1. Plant Breeding: Developing new plant varieties suitable for dry and intermediate zones of Sri Lanka. Changing the traits of plants to produce desired characteristics. 2. Plant Pathology: Evaluation of disease samples collected from research and farmers' fields. Detect the causal organism and suggest the possible solution to control the disease. Evaluation and efficacy of bio-control agents for pathogens. 3. Plant Entomology: Management of insect pests of field, fruit, and OFCs. Deliver effective solutions using integrated pest management strategies. 4. Breeder Seed Production 5. Soil and Agronomy 6. Organic Agriculture Major research related activities of RARDC- Kilinochchi are as follows, • Development and release of new plant varieties which suitable for dry and intermediate zones. • Development of High yielding locally preferred and field tolerant crops to major fungal diseases. • Collect and analyze soil and water samples and generating reports with recommendations. • Organic control methods for pest and other insects RARDC- Kilinochchi has laboratory facilities to deliver the services and the research activities with well experienced and qualified research staff consists with Additional Director, Assistant Directors Agriculture (Research), Research Assistants and Technical Assistants. The laboratory facilities required to undertake the existing research and experiment activities are already established. There is a farm division and eight (8) research division comes under RARDC Aralaganwila. The divisions are (i) Plant Breeding, (ii) Horticulture, (iii) Soil

Science, (iv) Agronomy, (v) Water Management, (vi) Entomology, (vii) Pathology and, (viii) Rice Research & Weed Science.

Under the separate divisions, the following services are been delivered;

- Development of new varieties of high yielding improved varieties of other field crops (OFC), dry zone vegetables and fruits suitable for irrigated and rainfed conditions with pest, disease and drought resistance quality.
- Development of plant protection strategies to minimize crop losses due to pest and diseases
- Development of improved agronomic practices to reduce the cost of production, to increase the productivity of agricultural lands and crops.
- Testing the adaptability of new improved varieties and technologies.
- Developing Improved soil and water conservation methods and soil fertility management practices

The laboratory facilities have been established for the above service delivery. To undertake the research and development activities, RARDC- Aralaganwila has well experienced and qualified staff headed by a Deputy Director (Research) and other staff consists of Assistant Director Agriculture (Research), Research Assistants, and Technical Assistants

DOA annually allocates funds for the recurrent expenditures of the laboratories. But existing equipment and the facilities are not enough to expand the labs' services. These labs should be equipped to expand their service to produce hybrid varieties of the crops and other crops related research and developments.

As the subproject, there are no civil works or cultivation activities are listed as the subproject's activities. Supplying equipment to enhance the laboratory facilities is the main activity of the subproject. Further, there is a well-established system for the present labs' operations. Hereafter will discuss the matters linked to the lab operation stage.

All the lab operations are followed by the standard operating procedure (SOP). SOP is a set of written instructions that describes, in detail, how to perform a laboratory process or experiment safely and effectively. Labs have written SOPs when work involves the use of hazardous materials (chemical, radioactive, and biological) or physical hazards.

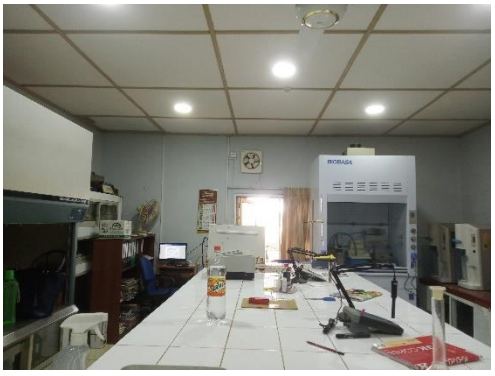



Figure 7: Operating Labs in Research Stations

2. Other factors

Solid waste

The solid organic waste such as parts of crops generated by labs' testing is disinfected using autoclaves and dumped in the soil pit after the testing. Due to disinfecting the remaining organic sample, there are no contamination or inoculation issues that may arise by the open-pit dumping. All stations have a higher land extent than 10 ha, therefore organic waste dumping is not an issue since there are no residents or other sensitive areas. All the chemical waste including labs chemicals, agrochemicals, and others is kept in a separate safe store building established in Mahailuppallama research station. RARDC-Kilinochchi and Aralaganwila safely collect their labs' chemical waste, agrochemical wastes, and the containers and transport them to the safe storage in Mahailuppalama. This store premise is arranged to store the chemical wastes of all research stations until properly destroyed. FCRDI annually calls bids to find a contractor for the safe disposal of chemical waste. After selecting a suitable contractor, the chemical waste will be removed properly. This is a special and important process observed during the screening process. There are no residential houses, staff quarters, offices, sensitive areas (community gathering centers, Tank, waterways, Marshy land, Forest patches...), or any other activity within a 500m radius of this safe store. DOA selects a contractor who has the facilities for the insulation of this waste at higher temperature (through Cement Kiln Co-processing) as an approved and appropriate method. Most often, the cement factories have been selected as the qualified contractor for this job. This process is being monitored by the DOA's special audit team timely whether there is quantity and process are going properly

Figure 8: Chemical waste store located at Mahailuppallama research station

All the crop residuals and post-harvest waste are burnt to keep the hygienic condition of the farm lands.

E-Waste Management Process

The total solution of the e-waste disposal consists of three main pillars. They are E-Waste Collection, E-Waste Logistics, and E-Waste Dismantling. During the e-waste collection, segregation is the most important step that helps to decide the disposal system. The segregation of the waste should be done at the place of origin and research stations will segregate and store their e-waste in the safe storage room. The CEA has introduced the E-Waste disposal system to Sri Lanka when it became a national issue. Simultaneously, they have introduced the Licensed E-Waste collectors to manage the logistics and the dismantling steps of the waste disposal process. The research stations have a responsibility to hand over their e-waste to the licensed waste collector timely. Based on the type of e-waste the following disposal systems have been identified for the proper management.

SN	Type of waste	Disposal System
1	Printed Circuit Board / Core Waste	Exported for Recycling
2	Plastic Waste	Redirected to Recyclers
3	Wire Waste	Redirected to Recyclers
4	Metal Waste	Redirected to Recyclers
5	Unrecyclable Waste	Disposed of through Cement Kiln Co-processing

Wastewater

All three stations have constructed waste water pits for proper management of labs' waste water.

Fire Exhausting Mechanism

Fire exhausting mechanisms have been established in each unit of labs in all three research stations.

	 Figure 9: Fire exhausting appliances installed at labs

E. DESCRIPTION OF THE EXISTING ENVIRONMENT

1. Physical features – Ecosystem components	
Topography and terrain	***Mahailuppallama Area-*** Geologically, the Mahailuppallama area belongs to the Vanni Complex of Sri Lanka and the elevation is below 113m AMSL. Generally, the area is having a flat to undulating terrain with a low slope (<slope 30%). The project site falls into dry zone low country of Sri Lanka and the features of this area is a combination of DL2 Agro-ecological zones ***Kilinochchi Area-*** Geologically, the Kilinochchi area belongs to the Vanni Complex of Sri Lanka and the elevation is below 15m AMSL. Generally, the area is having a flat to undulating terrain with a low slope (<slope 30%). The project site falls into dry zone low country of Sri Lanka and the features of this area is a combination of DL2 Agro-ecological zones. ***Aralaganwila Area-*** Geologically, the Kilinochchi area belongs to the Vanni Complex of Sri Lanka and the elevation is below 65m AMSL. Generally, the area is having a flat to undulating terrain with a low slope (<slope 30%). The project site falls into dry zone low country of Sri Lanka and the features of this area is a combination of DL2 Agro-ecological zones.
Climate and Meteorology	***Mahailuppallama Area***- Climatically the area belongs to low country dry zone and the average temperature is 27.8ºC and maximum and minimum are 35.1°C and 29.4°C respectively. The average annual rainfall varies from 1,300 mm to 2,416 mm and average 1,400mm. Relative Humidity varies from 70% during the day to 90% at night. ***Kilinochchi Area***- Average temperature is 27.8ºC and maximum and minimum are 35.1°C and 29.4°C respectively. The average annual rainfall varies from 1,300 mm to 2,416 mm and average 1,400mm. Relative Humidity varies from 70% during the day to 90% at night

	Aralaganwila Area- Climatically the area belongs to low country dry zone and the average temperature is 27.8ºC and maximum and minimum are 35.1°C and 29.4°C respectively. The average annual rainfall varies from 1,300 mm to 2,416 mm and average 1,400mm. Relative Humidity varies from 70% during the day to 90% at night.
Soil (*type and quality*)	***Mahailuppallama Area***- Two main soil groups can be identified; i.e Reddish Brown Earth and Low Humic Gley Soils are the soil types in this area (Source: soil map of Sri Lanka). The area is not identified as landslide-prone areas as per the Soil Conservation Act of Sri Lanka. ***Kilinochchi Area***- Raddish Brown Earths & Red Yellow Latosols which are suitable for cultivation in this area (Source: soil map of Sri Lanka). ***Aralaganwila Area***- Two main soil groups can be identified; i.e Reddish Brown Earth and Low Humic Gley Soils are the soil types in this area (Source: soil map of Sri Lanka). The area is not identified as landslide-prone areas as per the Soil Conservation Act of Sri Lanka
Surface water (*Sources, distance from the site, local uses and quality*)	***Mahailuppallama Area*** - Many open water bodies such as tanks and irrigation canals are located within the Ipalogama DSD. Mahailuppallama Tank is located at the southern boundary of the research station land. And Yoda ela (Right distribution canal of Kalawewa) runs at Northern boundary of the research station land.  Figure 10: Open water bodies located within area **Use**: The main surface water sources of the area are irrigation canals and tanks. The use of surface water for bathing & washing purposes, animals, and agriculture is common.

Quality: The quality of surface water in the area is moderate

Kilinochchi Area - Many open water bodies such as tanks and irrigation canals are located within the Karachchi DSD. Kanakambikai Kulam and Iranamadu Tanks are located at the southern and south- east directions of the research station land. There are irrigation canal networks adjoining to the research station's land.

Figure 11: Open water bodies located at the surrounding area

Use: The main surface water sources of the area are irrigation canals and tanks. The use of surface water for bathing & washing purposes, animals, and agriculture is common.

Quality: The quality of surface water in the area is moderate

Aralaganwiila Area - Many open water bodies such as Tanks and Irrigation canals are located within the Dimbulagala DSD. A main irrigation distribution canal (Z-D canal) runs at the boundary of the research station.

Figure 12: Open water bodies located at the boundary of the RARDC

Use: The main surface water sources of the area are irrigation canals and tanks. The use of surface water for bathing & washing purposes, animals, and agriculture is common.

Quality: The quality of surface water in the area is moderate

Ground water (*Sources, distance from the site, local uses and quality*)	***Mahailuppallama, Kilinochchi & Aralaganwila Areas-*** The groundwater of the area is available. Generally, the groundwater table is located within 3-5m depth and many farmers, institutions have constructed dug wells, agrowells, and tube wells for the use of domestic, animals, and irrigation purposes. The groundwater table of the areas is recharged with the tanks and the irrigation canal network located within the area. The quality of groundwater present in this area is moderate in condition and use for washing/ bathing activities. Most of the residents of the area use at least domestic level RO[1] (Reverse Osmosis) units to purify the groundwater for drinking purposes.
Air quality (*Any pollution issues*)	Any major pollution source near the three research stations area is not recorded
Noise	No any noise pollution sources in the vicinity of the stations.
2. Ecological features – Eco-system components	
Vegetation (*Trees, ground cover, aquatic vegetation*)	***Mahailuppallama Area***- Scrubland and disturbed secondary vegetation type is prominent in the area. In addition, agricultural lands and river associated vegetation are common habitat types present in this area. The whole land belongs to research station except the built-up area is used for the cultivations and to establish the propagation houses (Polytunnels, glass houses, net houses, etc.) The flora such as *Mimosa pudica* (Nidikumba), *Panicum rapens, Paniucum notatum* (Ginigrass), *Ricinious communis*, *Ziziphus oenoplia* (Heen Eraminia), and *Azadirachta indica* (Neem) are commonly observed in the surrounding area of the research station. ***Kilinochchi Area***- Scrubland and disturbed secondary vegetation type is prominent in the area. In addition, agricultural lands and river associated vegetation are common habitat types present in this area. The whole land belongs to research station except the built-up area is used for the cultivations and to establish the propagation houses (Polytunnels, glass houses, net houses, etc.) The flora such as *Mimosa pudica* (Nidikumba), *Panicum rapens, Paniucum notatum* (Ginigrass), *Ricinus communis* (Aamanakku), *Ziziphus oenoplia* (Heen Eraminia), and *Borassus flabellifer* (Palmyra) are commonly observed in the surrounding area of the research station ***Aralaganwila Area***- Scrubland and disturbed secondary vegetation type is prominent in the area. In addition, agricultural lands and river associated vegetation are common habitat types present in this area. The whole land belongs to research station except the built-up area is used for the cultivations and to establish the propagation houses (Polytunnels, net houses, etc.)

[1] Reverse Osmosis (RO) is a **water treatment process that removes contaminants from water by using pressure to force water molecules through a semipermeable membrane**. During this process, the contaminants are filtered out and flushed away, leaving clean, delicious drinking water.

	The flora such as *Mimosa pudica* (Nidikumba), *Panicum rapens, Paniucum notatum* (Ginigrass), *Ricinus communis* (Aamanakku), and *Ziziphus oenoplia* (Heen Eraminia), are commonly observed in the surrounding area of the research station
Presence of wetlands	No wetlands present in the area adjacent to research stations
Fish and fish habitats	Open water bodies such as tanks and irrigation canals are water bodies that are ideal for fish habitat and also found with freshwater fish varieties.
Birds (*waterfowl, migratory birds, others*)	***Mahailuppallama Area***- The research station area is closer to the waterways and agricultural lands and there is a possibility of recording bird species in these habitat types. The several bird species were observed such as the Crows, Parrots, Eagles and Egrets, Red-Vented Bullbull, Black-headed Ibis, Chestnut Headed, Bee-eater, Pheasant-tailed Jacana Common mynah, Great Cormorant, Lesser Whistling Duck, tailed godwits, Pheasant tailed Jacana. The species were recorded in this habitat are very common for this type of habitat ***Kilinochchi Area***- The research station area is closer to the waterways and agricultural lands and there is a possibility of recording bird species in these habitat types. The several bird species were observed such as the Crows, Parrots, Eagles and Egrets, Red-Vented Bullbull, Black-headed Ibis, Chestnut Headed, Bee-eater, Pheasant-tailed Jacana Common mynah, Great Cormorant, Lesser Whistling Duck, tailed godwits, Pheasant tailed Jacana. The species were recorded in this habitat are very common for this type of habitat ***Aralaganwila Area***- The research station area is closer to the waterways and agricultural lands and there is a possibility of recording bird species in these habitat types. The several bird species were observed such as the Crows, Parrots, Eagles and Egrets, Red-Vented Bullbull, Black-headed Ibis, Chestnut Headed, Bee-eater, Pheasant-tailed Jacana Common mynah, Great Cormorant, Lesser Whistling Duck, tailed godwits, Pheasant tailed Jacana. The species were recorded in this habitat are very common for this type of habitat
Presence of special habitat areas (*special designations and identified sensitive zones*)	***Mahailuppallama Area***- No presence of special habitat areas is reported within a 5 km radius of the research station. According to environment sensitive areas map of CEA, no any environmental sensitive area recorded in the close proximity of the project site ***Kilinochchi Area***- No presence of special habitat areas is reported within a 5 km radius of the research station.

	According to environment sensitive areas map of CEA, no any environmental sensitive area recorded in the close proximity of the project site ***Mahailuppallama Area***- No presence of special habitat areas is reported within a 5 km radius of the research station. Maduru Oya National Park is located 15km away from the research station. According to environment sensitive areas map of CEA, no any environmental sensitive area recorded in the close proximity of the project site
3. Other features	
Residential/Sensitive Areas (*E.g., Hospitals, Schools*)	All labs belonging to the three research stations are located separately from the other institutions and they do not impact sensitive areas such as hospitals, schools, etc..
Archeological resources (*Recorded or potential to exist)*	The labs are located on DOA owned lands and there is no archeological or Physical Cultural Resource (PCR) to record or potential to exist.

G. SOCIO-ECONOMIC ENVIRONMENT

1. Stakeholders and Public consultation

Stakeholders' engagements

The Department of Agriculture is the main project partner agency of this subproject. The staff of the research stations jointly prepared their capacity needs and submitted them to the ASMP. Several discussions were undergone to finalize the subproject activities between the research stations' staff and the ASMP. For more transparency, the research stations' staff were represented the technical evaluation committee of this subproject.

The ASMP PMU staff conducted site visits, consultations with DOA's officials during subproject identification and designing stages.

Table 1: Responsible Officers in ASM Project Activities

SN	Name	Designation	Contacts
Mahailuppallama Research Center			
1	Mrs. K.N.C.Gunawardhana	Director	nishanthigun@yahoo.com
2	Dr. R.L.Senanayake	Coordinator	ravisena@gmail.com
3	Dr. K.N. Kannangara	Principal Agriculture Scientist (Breeding)/ Chili Breeder	kannangara65@gmail.com
4	Dr. M.A.P.W.K. Malaviarachchi	Principal Agriculture Scientist (Agronomy)	wmalavi@yahoo.com
5	Dr. M.S. Nijamudeen-	Principal Agriculture Scientist (Soil Fertility)	msnija66@yahoo.com
6	Mr. D.C.M.S.I. Wijewardhana-	Maize Breeder	susantha.indi@gmail.com
7	Mr. R.A.C.J.Perera-	Soil and Water Management	chamilapere@yahoo.com
8	Ms. W.M.K. Fernanado	Pathologist	menukrisha@yahoo.com
9	Mrs. M.A.R.A. Mandanayake-	Entomologist	ra.mandanayake@gmail.com
10	Mrs. W.A.R. Dhammika	Biotechnology	ra.mandanayake@gmail.com
Kilinochchi Research Center			
11	Dr. S.J. Arasakesary	Additional Director of Agriculture (Research)	kesaryabiyal@yahoo.com
Aralaganwila Research Center			
12	Mr. W.A. Wijithawarna	Deputy Director (Research)	wijithaagric@yahoo.com

Stakeholders' consultation

During the social and environmental screening process, the staff of FCRDI-Mahailuppallama, RARDC- Kilinochchi, and RARDC- Aralaganwila were consulted. Meantime ASMP has taken actions to conduct the stakeholders' consultation starting from the subproject identification stage up to finalizing

the subproject's design. It was a good tool to maintain transparency among the stakeholders. Due to the impact of the fruitful consultation process undertaken by the ASMP, the research stations' staff are well aware of the subproject activities and their objectives. Meantime, they have negotiated and decided the real requirements that they want to enhance the research facilities of the stations.

Table 2: Consultation outputs

Locations / Sub Units / Fields Visited	Participants with Designations	Matters Discussed
FCRDI-Mahailuppallama on 05.01.2022		
• Director's Office • Pathology Laboratory • Entomology Laboratory • Agronomy Laboratory • Biotechnology Laboratory • Soil Water Management Division • Environment Control Research Unit • Common Stores	• Mrs. K.N.C. Gunawardhana- Director (Research) • Dr.R.L. Senarathna- Agronomist/ Coordinator-ASMP Activities • Ms. W.M.K. Fernanado – Pathologist • Mr. R.A.C.J. Perera- Assistant Director of Agriculture (Research) • Ms.P.I.K. Peris- Store man	• Overall capacity building plan on strengthening laboratory facilities and infrastructure development for hybrid seed production • Routine functions of the labs • Services provided to farmers and other outsiders • Safety precautions that are implemented • Waste disposal • Irrigation, water supply and drainage
RARDC-@ Kilinochchi on 06.01.2022		
• ADA's Office • Soil Laboratory • Pathology Laboratory • Plant Nursery	• Mr.P.G.H.M.N. Herath- Assistant Director of Agriculture (Research) • Mr. Amirthalojanan- Research Assistant	• Proposed ASMP activities • Ongoing research works and hybrid seed production activities • Routine functions of the labs • Services provided to farmers and other outsiders • Safety precautions that are implemented • Waste disposal • Irrigation, water supply and drainage
RARDC-@ Aralaganwila 0n 06.01.2022		
• Deputy Director (Research)'s Office • Soil Laboratory • Research field	• Mr. W.A. Wijithawarna- Deputy Director of Agriculture (Research) • Mr. Danusha Madushanka- Research Assistant • Mrs.U.W. Nisansala Priyadarshani- Technical Assistant	• Proposed ASMP activities • Ongoing research works and hybrid seed production activities • Routine functions of the labs • Services provided to farmers and other outsiders • Safety precautions that are implemented • Waste disposal • Irrigation, water supply and drainage

H. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
1	Are there any asset(s) that would be affected or acquired due to proposed project interventions such as: Land, Physical structure (Dwelling or commercial), Fruit trees/crops, Community Resource Property etc.?		√		Subproject includes only supplying of equipment for the laboratories of three research stations at Mahailuppallama, Kilinochchi and Aralaganwila
2	Is the sub-project area adjacent to (less than 500m) or goes through any of the following environmentally sensitive areas such as: Cultural heritage site, protected area and/or of its buffer zone, Conservation Forest, reserve or a sanctuary, Mangrove, Estuarine, Wetland, including paddy fields, water bodies, PCRs, Landslide-prone areas etc.?		√		No such sensitive areas are located in the vicinity of the subproject area
3	Will the project activities involve with Encroachment on historical/cultural areas: disfiguration of landscape by road embankments, cuts, fills and quarries?		√		The equipment proposed to supply under this subproject will be placed in the currently operating laboratories only
4	Will the project interventions involve with encroachment on or impact ecologically sensitive or protected areas?		√		No civil/construction works includes in this subproject
5	Will the project interventions involve with alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		√		No civil/construction works includes in this subproject
6	Will the project interventions involve with deterioration of surface water quality due to silt runoff and sanitary wastes from work-based camps and chemicals used in construction?		√		No civil/construction works includes in this subproject
7	Will the project intervention involve with Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?		√		No such activities are included as the subproject's activities
8	Will the project interventions involve with noise and vibration due to blasting and other civil works?		√		No blasting activities are required for the subproject
9	Is there any possibility to create poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of		√		No such impacts are anticipated

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
	communicable diseases from workers to local populations due project interventions?				
10	Will be possible to creation of temporary breeding habitats for mosquito vectors of disease?		√		No such impacts are anticipated
11	Will there be risk of accidents associated with the increased vehicular traffic due to project interventions?		√		No such impacts are anticipated
12	Will the project activities increase the risk of water pollution from oil, greases and fuel spills, and other materials?		√		No such impacts are anticipated
13	Will the project activities involve with additional waste in water canals that may increase floods and waterlogs?		√		No such impacts are anticipated
14	Will the project activities involve with new/restored public areas/ spaces that can be inundated in case of floods?		√		No such impacts are anticipated
15	Project interventions proposed to include Green infrastructure: Does sub-project include any of the following design aspects such as: Sri Lankan Guidelines of Green and Environmentally Friendly Building for the State Institutions (2016), Low energy materials, Reduced water use options, Energy optimization for lights, A/C etc. , Recycling and waste management, Increased human comfort, Enhanced landscaping, exterior or interior design, Site selection considering conservation of vegetation and wildlife?		√		Under this subproject, only supply the equipment for the laboratories established and operating in three research stations at Mahailuppallama, Kilinochchi, and Aralaganwila
16	Will the project interventions increase disaster Risk Management (DRM): such as: Floods, including coastal, Storm surges, Coastal erosion, Landslides, Land subsidence, Soil erosion and sedimentation, Rock falls, Cyclones, Droughts, Earthquakes, Salinization, salinity intrusion into drinking water sources, Forest fires, High winds, tornadoes etc., Epidemic and hazards related to environmental pollution, Vector borne diseases?		√		No such impacts will be resulted by this subproject
17	Will construction and operation of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.?)		√		The proposed subproject will enhance the capacities of the existing laboratories in three research stations at

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
					Mahailuppallama, Kilinochchi, and Aralaganwila by providing equipment
18	Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?		√		No such substances are involved with this subproject
19	Will the Project produce solid wastes during construction and/ or operation?		√		No solid waste is generated due to the subproject. But the crop residuals, organic waste, lab chemicals and agrochemicals will be generated during lab operation period. The crop residuals will be burnt at field level. The organic waste generated at labs will be disinfected using autoclaves and placed in soil pit. The labs' chemical and agrochemical waste will safely store in the separate premises with all precautions until the proper discharge. (The process has been explained in report- section F. Description of proposed subproject activities, No.2 Solid waste
20	Will the Project release pollutants or any hazardous, toxic or noxious substances to air?		√		No such emission will be released
21	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?		√		No such impacts are anticipated as a result of the subproject implementation or operation
22	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater or coastal wasters?		√		No such impacts are anticipated
23	Will the project cause localized flooding and poor drainage during		√		No such impacts are anticipated

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
	construction Is the project area located in a flooding location?				
24	Will there be any risks and vulnerabilities to public safety due to physical hazards during construction or operation of the Project?		√		No such impacts are anticipated
25	Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?		√		No such impacts are anticipated
26	Are there any routes or facilities on or around the location, which are used by the public for access to recreation or other facilities, which could be affected by the project?		√		No such impacts are anticipated
27	Are there any areas or features of high landscape or scenic value on or around the location, which could be affected by the project?		√		No such impacts are anticipated
28	Are there any other areas on or around the location, which are important or sensitive for reasons of their ecology e.g., wetlands, watercourses or other water bodies, the coastal zone, mountains, forests, which could be affected by the project?		√		No such impacts are anticipated
29	Are there any areas on or around the location, which are used by protected, important or sensitive species of fauna or flora e.g., for breeding, nesting, foraging, resting, migration, which could be affected by the project?		√		No such impacts are anticipated
30	Is the project located in a previously undeveloped area, where there will be loss of green field land		√		No such impacts are anticipated
31	Will the project cause the removal of trees in the locality?		√		Tree removal is not required
32	Are there any areas or features of historic or cultural importance on or around the location, which could be affected by the project?		√		No such impacts are anticipated
33	Are there existing land uses in or around the location e.g., home gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?		√		No such impacts are anticipated
34	Are there any areas in or around the location which are densely populated or built-up, which could be affected by the project?		√		Labs are separately established

SN	Screening question	Yes	No	Significance of the effect (Low, moderate, high)	Remarks
35	Are there any areas in or around the location, which is occupied by sensitive land uses e.g., hospitals, schools, places of worship, community facilities, which could be affected by the project?		√		Labs are separately established
36	Are there any areas in or around the location, which contain important, high quality or scarce resources e.g., groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?		√		Labs are separately established
37	Are there any areas in or around the location, which are already subject to pollution or environmental damage e.g., where existing legal environmental standards are exceeded, which could be affected by the project?		√		No such impacts are anticipated

I. CONCLUSION AND SCREENING DECISION SUMMARY OF ENVIRONMENTAL EFFECTS:

Assuming that all mitigation measures are implemented as proposed, the following effects can be predicted

Key project activities	Potential Environmental Effects	Significance of environmental effect with mitigation in place NS - Effect not significant, or can be rendered insignificant with mitigation SP - Significant positive effect SN - Significant negative effect U - Outcome unknown or cannot be predicted, even with mitigation
Supplying of equipment to laboratories in FCRDI-Mahailuppalama, RARDC- Kilinochchi and RARDC- Aralaganwila	Waste disposal	NS

J. OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

1. The client's (Research Station's Officers) responsibility for preventing/minimizing/mitigating adverse environmental issues raised during the subproject operational stage

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
1	Soil, Water, and Leachate	• Soil and water (surface and ground water) on the onsite is unlikely to be contaminated by the operation of the subproject	• Periodic monitoring of the operation of the wastewater management system of the research station • Ensure the operation of wastewater pits in good condition • Periodic maintenance of the sedimentations, overflow of the waste water pits • Periodic maintenance of the pipelines of the wastewater management system • Timely address the breakdown/blocking of the pipelines and pits • Testing the samples to check the contamination of soil, groundwater table, and the surface water sources of the surrounding area • Avoid surface water stagnation and creating mosquito breeding places • Frequent monitoring of contamination of leachate that is originated in labs with water and soil if any
2	Traffic and Transport Impact	• Unnecessary Traffic (Vehicular and Pedestrians) issues raised by Transport needs of the subproject operation	• No new transport needs is generated by the operation of the subproject • Follow the solid waste transport schedule according to the present routing • Identify the new transport needs created by the subproject operation if avail • Plan the new transport needs minimizing present activities • Display the in and out services routes to aware the staff
3	Air Quality	• Dust, Odour and Greenhouse Gas generated by the Subproject Operation	• Assess the emission (Air Quality Testing) during subproject operation • Assess the potential impacts of dust, suspended particulate matter, odor, and greenhouse gas emissions

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Take precautionary actions to minimize the emission
4	Noise and Vibration	• Disturbances and inconveniences occurred by Noise and Vibration	• Measure the noise and vibration level of subproject operation • Identify the possible impacts by noise and vibration created by subproject operations • If exceed the acceptable level of noise and vibration, take precautionary actions to minimize • Prepare the specifications of the equipment and machinery with low vibration and noise • Introduce a code of conduct for the staff who engages in subproject operations to minimize the noise and vibration impacts. • Noise emission levels of all critical plant and equipment should be expected to comply with manufacturers' specifications with noise limits appropriate to those items
5	Invasive Species of Flora and Fauna, Weeds, Pests and Diseases	• Invasive Species of Flora and Fauna, Weeds, Pests and Diseases spreading due to subproject's operation	• Always keep hygienic conditions of the labs, cultivation areas. • Disinfect all the soil, plant and pests samples after testing using autoclaves or appropriate technique. • The composting organic material, which may contain insect eggs or larvae, weed seeds and spores, will be subject to temperatures in excess of 55 degrees for at least three days. • Control the weeds, diseases and pests as stipulated in PMP • Select healthy and diseases free planting materials with high purity for the cultivation • Avoid the contaminations of cultivation lands • Avoid the visitors of the labs and cultivation areas • Follow the approved procedures to maintain the hygienic conditions at the labs and cultivation plots • Follow the guidelines for the transport of the movement of solid waste from the research station/ farmlands

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Burnt the crop residuals and the organic waste generated at the locations using safety measures
6	Waste Management	• Crops-related waste, general waste	• Dump the organic waste in the soil pit established at the stations • Use the organic waste for compost preparation after heat treatments/ disinfection • Burnt the crop residuals to maintain hygienic conditions of the field • Implement crop rotation to breakdown of pests/ diseases lifecycles
		• Utensils of agrochemicals, & chemicals, and chemical waste	• Store in the safe store up to proper dispose • Select a suitable contractor who has facilities for Cement Kiln Co-processing for disposing
		• E-Waste	• Segregate the e-waste on its type • Store in the safe store up to proper dispose • Keep records on the accumulated waste • Contact the licensed e-waste collectors (CEA Licensed) • Handing over the e-waste to the licensed e-waste collector for proper disposal that has been approved by the CEA
7	Occupational Health and Safety	• Occupational hazards which can cause during subproject operation	• Develop and implement site-specific Health and Safety (H&S) plan which will include measures such as: (a) excluding the public from the defined labs/cultivation areas; (b) ensuring all workers/staff are provided with and use of personal protective equipment (PPE); (c) provision of H&S training for all personnel; (d) documented procedures to be followed for all construction activities; and (e) documentation of work-related accidents (There is a SOP that has already been implemented in the labs and all activities have been arranged accordingly).

SN	Potential Environmental Impacts and Risk Level	Key project activities causing the impact	Preventing/Minimizing/Mitigation Measures proposed and action to be implemented by the Contractor
			• Provide H&S training to all new workers/staff to ensure that they are appraised of the basic rules of work at the labs, personal protective protection, and preventing injuries to fellow workers/staff • Ensure that a first-aid station, eye washers, bathing location are provided within easy access to all and that trained first-aid personnel are made available to attend to first-aid needs and keep ready the vehicle to a government hospital in emergency case. • Provide medical insurance coverage for all workers/ staff • Ensure that all labs/ cultivation areas are barricaded to prevent unauthorized person entry • Provide a source of potable water and a clean eating place for workers, at a location not exposed to hazardous or noxious substances. • Provide visitors with necessary safety gear if visitors to the labs/cultivation areas are allowed access to areas where incubators, crop/disease samples, culturing activities, hazardous conditions, or substances may be present. • Ensure that visitor/s do not enter hazard areas unescorted by relevant authorized parties in attendance. • Provide signboards to mark, hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal of hazardous substances. • Such signage shall be in accordance with international standards and be well known and easily understood by workers, visitors, and the general public

2. Cost of mitigation

The cost incurred with implementation of O-EMP will be allocated through the research station's budget

K. EMP IMPLEMENTATION RESPONSIBILITIES AND COST

The subproject includes only supplying equipment for the laboratories that are already established and operating in laboratories in FCRDI- Mahailuppalama, RARDC- Kilinochchi, and RARDC- Aralaganwila. Hence, no civil/construction works include in the subproject. All the labs are operating based on the standards of the procedures (SOP). The anticipated impacts are identified to develop an operational environmental management plan (O-EMP) to be followed by the workers/ staff of the research stations during subproject implementation is presented above. The overall responsibility of ensuring compliance with safeguard requirements rests with the PMU. The PMU will be directly responsible for reviewing the proposed activities are aligned with environmental safeguards compliances. The overall supervision will be carried out by the in-house staff of the PMU supported by the staff in research centers. Any consequent modification or amendments of subproject will be negotiated prior to implementation with ASMP and DOA staff with notification to the WB's office.

Environmental & Social monitoring will be carried out largely through visual observations and compliance monitoring using the checklist provided in the EMF & RPF by the Safeguard Specialist of the PMU and the DOA jointly. The Environmental and Social Safeguards Specialist will need to visit the site quarterly and report on issues and performance on ESMP implementation to the PMU.

L. DETAILS OF PERSON RESPONSIBLE FOR THE ENVIRONMENTAL SCREENING

This project does not require environmental clearance under national environmental regulations. No other approval is required due to the spread and magnitude of the project. The project will have negligible environmental impacts, mostly limited to the operation period and there is a set of activities to manage the impacts to the environment. The impacts on the physical and biological environment are virtually none.

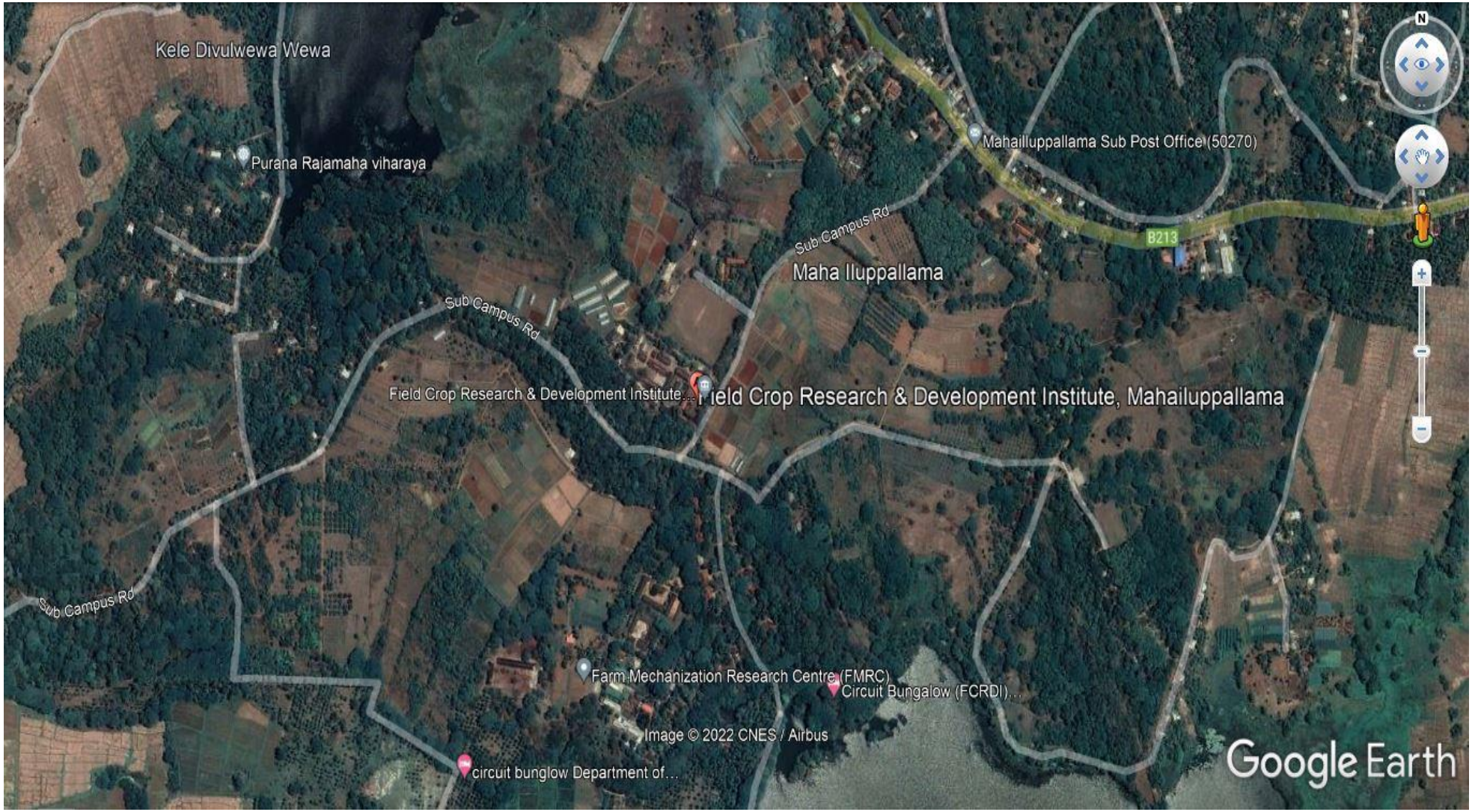
M. DETAILS OF PERSONS RESPONSIBLE FOR THE ENVIRONMENTAL SCREENING

Screening conducted and reviewed **D.M. Sanjaya Bandara** Environment and Social Safeguard Specialist Agriculture Sector Modernization Project ***Name/Designation/Contact information***	**Date** January 2022 ***Signature***
Screening report approved by **Dr. Rohan Wijekoon** Project Director Agriculture Sector Modernization Project ***Name/Designation/Contact information***	**Date** January 2022 ***Signature***

N. ANNEXES

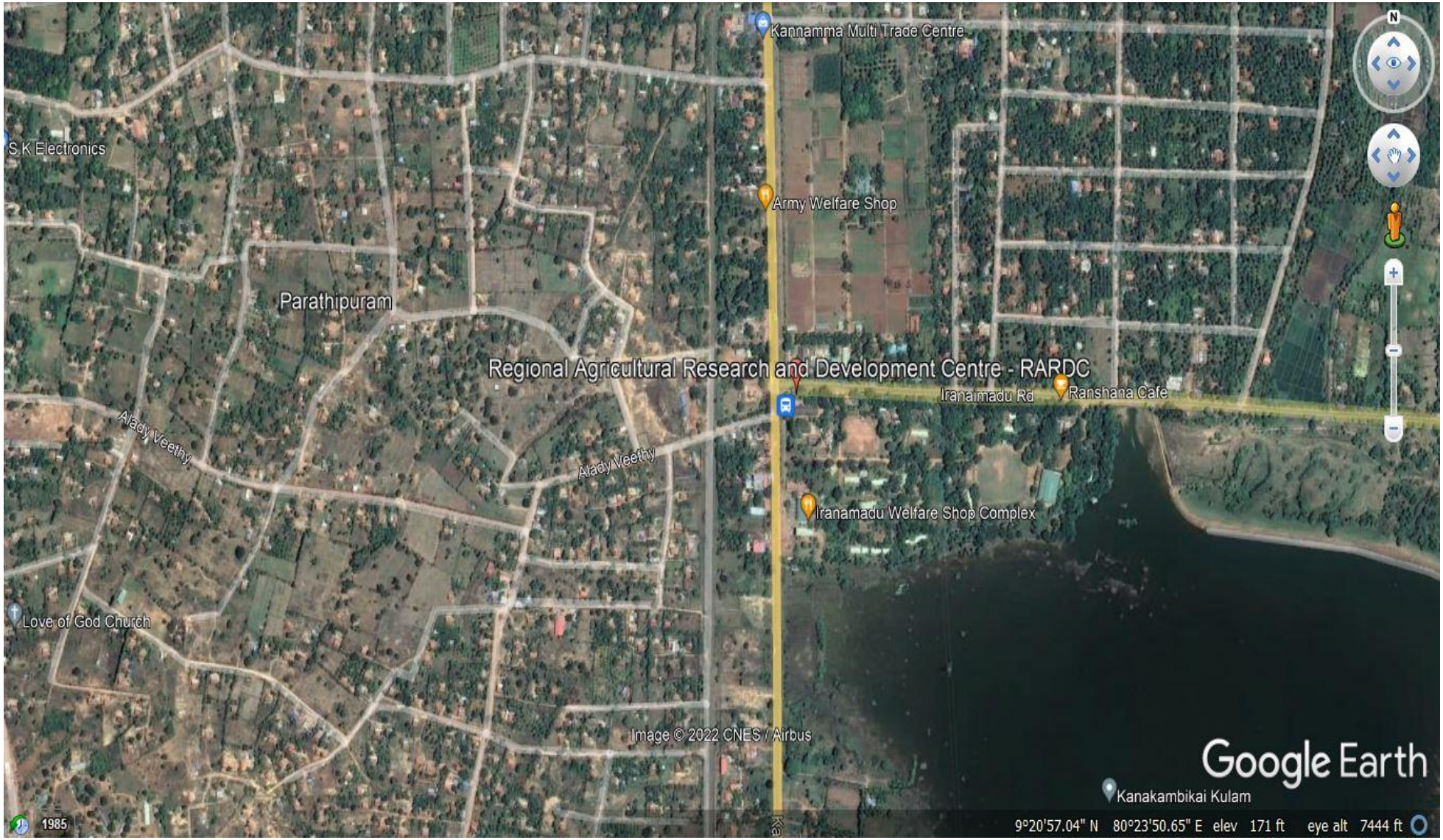
Annex 1: Google Map/ Location Map

1. Field Crops Research and Development Institute at Mahailuppallama



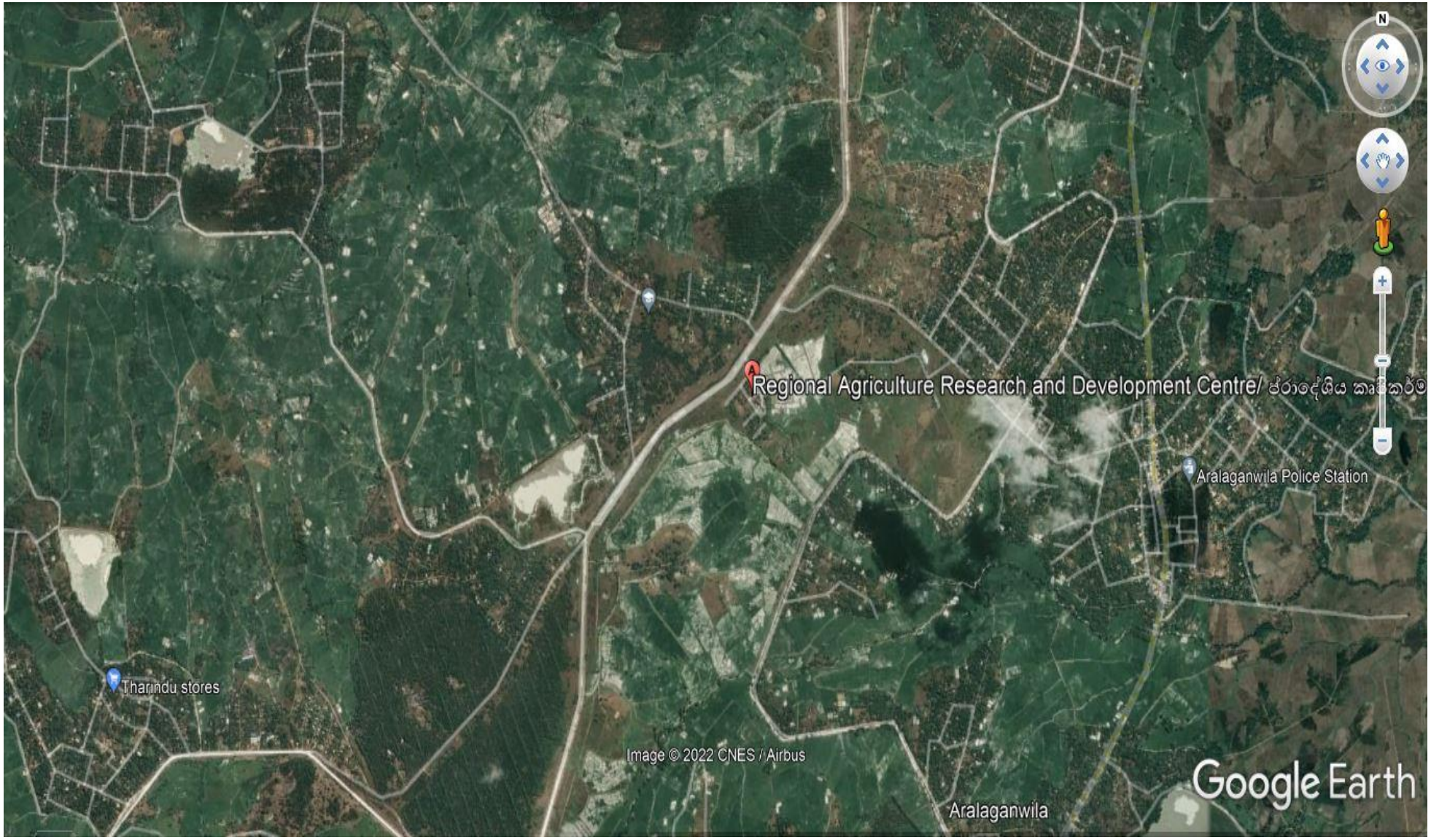
Source: Google Map

2. *Regional Agriculture Research and Development Centre at Kilinochchi*



Source: Google Map

3. *Regional Agriculture Research and Development Centre at Aralaganwila*



Source: Google Map

Annex 2: Description of the subproject activities developed by the FCRDI-MI

Strengthening laboratory facilities to support input and product analysis; Expanding field extension, local and global GAP certification for business-oriented farming activities targeting local and export marketing

Introduction

Strengthening infrastructure and Technological/Technical capacities of the Department of Agriculture is an essential need to ensure provision services and follow-up support for the farmer production organization (FPOs) established under Component 2 of the Agriculture Sector Modernization Project (ASMP). This is further to the basic field facilities established for basic seed production of chili and maize (FIELD CROPS CENTER), vegetables including potato vegetable CENTER), and the fruit crops (FRUIT Center), which the centers of excellence of the relevant crop categories established at Mahailuppallama (including Kilinochchi and Aralaganwila), Gannoruwa/Kundasale/Dondagolla/Seetha Eliya Complex, and Horana, respectively.

Furthermore, addressing issues related to food safety is pivotal owing to the increasing trend of non-communicable diseases in Sri Lanka, thus, prompting people to be more health-conscious in terms of the food they consume. This is true for both processed or packed food as well as fresh produce. Though some of the safety standards and traceability systems are available for processed food, food safety certification for fresh agricultural products is still a new concept to Sri Lankan consumers.

Hence, apart from having basic seed production to support enhanced productivity drive and farmer livelihood development through component 2 of the ASMP, fulfilling the requirement of certified safe food is considered important through the promotion of the SL- GAP program, which is in existence in Sri Lanka since 2015. Insufficient production, scattered producers, non-continuous supply, poor marketing channels, and low consumer awareness on GAP-certified products have become major issues at present that required immediate solutions. At present, there is a gap in market requirements and the supply of GAP-certified products. Hence, expanding the SL-GAP program among the FPOs under the ASMP would provide quality agriculture produce at a lower price while providing high income for the SL-GAP farmers.

Rationale:

- Improving the laboratory and other related technological and technical capacities of the three Centers of Excellence is imperative to achieve the objectives of the ASMP, especially in terms of sustainability through continuous interventions.
- Providing continuous technical and technological such as soil testing, issuance of site-specific fertilizer recommendations, the introduction of new varieties suitable for different agro-ecological regions including their management packages to the farming communities in the project areas during and after completion of the ASMP.

- Providing technical support to the farmers to improve crop productivity, especially in the established SL-GAP farms through the services provided by the Centers of Excellence and the Extension and Training arms of the DOA, Provincial Departments of Agriculture, and the Mahaweli Authority of Sri Lanka.
- Field quality assurance by auditing and issuing of SL-GAP certificate to the GAP farms established through the involvement of the Centers of Excellence and with the assistance of the Seed Certification Service in the DOA, which regulates the auditing of SL-GAP farms.
- Support the establishment of productive model farms, including GAP Model Farms, in the project sites through technological intervention from the Centers of Excellence, including the production of Orange, Pineapple, Guava, Passion fruit, and Banana.
- Continuous laboratory monitoring programs to be carried out island-wide on pesticide residues, contaminants, and pollutants in the agriculture environment comprise of food, soil, and water and monitoring programs for periodic assessment of toxicity of pesticides to pests, natural enemies, and beneficial organisms for maintaining the sustainability of model farms.

Description of the Activity

Activities	Estimated Cost (Rs Mn)	Expected Outcome (KPIs)	Beneficiaries
FIELD CROPS Center at Mahailuppallama	**65.0**		
Technology for development of Maize and Chili hybrids		**Chili**: 3 varieties (high yielding: 35 t/ha green chili), tolerant to leaf curl complex, suitable for dry chili production) (Within 5 years) **Maize**: 3 varieties (high yielding: 8-10 t/ha, having complete husk cover and complete cob filling up to tip. (Within 5 years) Developed inbred lines for hybrid variety improvement program **Chili**: 6 lines **Maize**: 8 lines	Chili growers: Direct Beneficiary Maize Growers: Direct Beneficiary Department of Agriculture: Indirect Beneficiary Universities: Indirect beneficiary Private sector: Indirect Beneficiary General Public: Indirect Beneficiary
Upgrading laboratory research facilities (genetic material development, multiplication of parental material and technology generation) for increased basic seed production			
Strengthening Research Facilities	46.6		
1. Data management & mapping unit for EM38-MK2 electromagnetic induction meter (1 unit) 2. PAGE operator - large samples (1 unit) 3. Refrigerated centrifuge: -20 °C (1 unit) 4. Drone with Sensors and Software for insect pest, weeds and disease scouting and mapping (1 complete set) 5. Redox meter (1 unit) 6. Automated colony counter (1 unit) 7. Phenotype micro arrays for microbial cells (2 units) 8. Disease test kits for on-field disease identification (1 unit) 9. Portable microscopes for field inspections (2 units) 10. Compound light microscope with digital imaging system (1 unit)			
Strengthening Laboratory facilities at FCRDI MI			
1. Flame Photometer – analysis of Na and K (1 unit) 2. Water bath – digestion of sampes (open bath) (1 unit) 3. Fully automated Kjeldhal sytem – Nitrogen analysis (1 unit) 4. Water purification unit – making distilled water (1 unit)			

Activities	Estimated Cost (Rs Mn)	Expected Outcome (KPIs)	Beneficiaries
5. pH Meter - measuring acidity/baseness of samples (1 unit) 6. Analytical Balance – weighing the samples (1 unit) 7. Top Pan Balance – weighin the samples 8. Ion meter with selective electrodes- To determine ionic species in water and extracts			
Basic seed production for Chilli and Maize in the Kilinochchi Research Station			
Strengthening Laboratory Facilities	**10.0**		
1. Upright Phase Contrast Microscope with digital maping (1 unit) 2. Table top laboratory Ice Maker (1 unit) 3. pH meter (Bench top) (1 unit) 4. EC Meter (1 unit) 5. Water purification unit – making distilled water (1 unit)			
Basic seed production for Maize in the Aralaganwila Research Station			
Strengthening Laboratory Facilities	**8.4**		
1. Flame Photometer – Analysis of Na and K 2. Water purification unit – making distilled water 3. pH conductivity meter (1 unit) 4. Soil moisture sensors: Profile Probe			

Annex 3: Interim Guidelines on COVID-19 of World Bank

ESF/SAFEGUARDS INTERIM NOTE: COVID-19 CONSIDERATIONS IN CONSTRUCTION/CIVIL WORKS PROJECTS

This note was issued on April 7, 2020 and includes links to the latest guidance as of this date (e.g. from WHO). Given the COVID-19 situation is rapidly evolving, when using this note it is important to check whether any updates to these external resources have been issued.

1. INTRODUCTION

The COVID-19 pandemic presents Governments with unprecedented challenges. Addressing COVID-19 related issues in both existing and new operations starts with recognizing that this is not business as usual and that circumstances require a highly adaptive responsive management design to avoid, minimize and manage what may be a rapidly evolving situation. In many cases, we will ask Borrowers to use reasonable efforts in the circumstances, recognizing that what may be possible today may be different next week (both positively, because more supplies and guidance may be available, and negatively, because the spread of the virus may have accelerated).

This interim note is intended to provide guidance to teams on how to support Borrowers in addressing key issues associated with COVID-19, and consolidates the advice that has already been provided over the past month. As such, it should be used in place of other guidance that has been provided to date. This note will be developed as the global situation and the Bank's learning (and that of others) develops. This is not a time when 'one size fits all'. More than ever, teams will need to work with Borrowers and projects to understand the activities being carried out and the risks that these activities may entail. Support will be needed in designing mitigation measures that are implementable in the context of the project. These measures will need to take into account capacity of the Government agencies, availability of supplies and the practical challenges of operations on-the-ground, including stakeholder engagement, supervision and monitoring. In many circumstances, communication itself may be challenging, where face-to-face meetings are restricted or prohibited, and where IT solutions are limited or unreliable.

This note emphasizes the importance of careful scenario planning, clear procedures and protocols, management systems, effective communication and coordination, and the need for high levels of responsiveness in a changing environment. It recommends assessing the current situation of the project, putting in place mitigation measures to avoid or minimize the chance of infection, and planning what to do if either project workers become infected or the work force includes workers from proximate communities affected by COVID-19. In many projects, measures to avoid or minimize will need to be implemented at the same time as dealing with sick workers and relations with the community, some of whom may also be ill or concerned about infection. Borrowers should understand the obligations that contractors have under their existing contracts (see Section 3), require contractors to put in place appropriate organizational structures (see Section 4) and develop procedures to address different aspects of COVID-19 (see Section 5).

2. CHALLENGES WITH CONSTRUCTION/CIVIL WORKS

Projects involving construction/civil works frequently involve a large work force, together with suppliers and supporting functions and services. The work force may comprise workers from international, national, regional, and local labor markets. They may need to live in on-site accommodation, lodge within communities close to work sites or return to their homes after work. There may be different contractors

permanently present on site, carrying out different activities, each with their own dedicated workers. Supply chains may involve international, regional and national suppliers facilitating the regular flow of goods and services to the project (including supplies essential to the project such as fuel, food, and water). As such there will also be regular flow of parties entering and exiting the site; support services, such as catering, cleaning services, equipment, material and supply deliveries, and specialist sub-contractors, brought in to deliver specific elements of the works.

Given the complexity and the concentrated number of workers, the potential for the spread of infectious disease in projects involving construction is extremely serious, as are the implications of such a spread. Projects may experience large numbers of the work force becoming ill, which will strain the project's health facilities, have implications for local emergency and health services and may jeopardize the progress of the construction work and the schedule of the project. Such impacts will be exacerbated where a work force is large and/or the project is in remote or under-serviced areas. In such circumstances, relationships with the community can be strained or difficult and conflict can arise, particularly if people feel they are being exposed to disease by the project or are having to compete for scarce resources. The project must also exercise appropriate precautions against introducing the infection to local communities.

3. DOES THE CONSTRUCTION CONTRACT COVER THIS SITUATION?

Given the unprecedented nature of the COVID-19 pandemic, it is unlikely that the existing construction/civil works contracts will cover all the things that a prudent contractor will need to do. Nevertheless, the first place for a Borrower to start is with the contract, determining what a contractor's existing obligations are, and how these relate to the current situation.

The obligations on health and safety will depend on what kind of contract exists (between the Borrower and the main contractor; between the main contractors and the sub-contractors). It will differ if the Borrower used the World Bank's standard procurement documents (SPDs) or used national bidding documents. If a FIDIC document has been used, there will be general provisions relating to health and safety. For example, the standard FIDIC, Conditions of Contract for Construction (Second Edition 2017), which contains no 'ESF enhancements', states (in the General Conditions, clause 6.7) that the Contractor will be required:

- to take all necessary precautions to maintain the health and safety of the Contractor's Personnel
- to appoint a health and safety officer at site, who will have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorized to enter and or work on the site and to take protective measures to prevent accidents
- to ensure, in collaboration with local health authorities, that medical staff, first aid facilities, sick bay, ambulance services and any other medical services specified are available at all times at the site and at any accommodation
- to ensure suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics

These requirements have been enhanced through the introduction of the ESF into the SPDs (edition dated July 2019). The general FIDIC clause referred to above has been strengthened to reflect the requirements of the ESF. Beyond FIDIC's general requirements discussed above, the Bank's Particular Conditions include a number of relevant requirements on the Contractor, including:

- to provide health and safety training for Contractor's Personnel (which include project workers and all personnel that the Contractor uses on site, including staff and other employees of the Contractor and Subcontractors and any other personnel assisting the Contractor in carrying out project activities)
- to put in place workplace processes for Contractor's Personnel to report work situations that are not safe or healthy
- gives Contractor's Personnel the right to report work situations which they believe are not safe or healthy, and to remove themselves from a work situation which they have a reasonable justification to believe presents an imminent and serious danger to their life or health (with no reprisal for reporting or removing themselves)
- requires measures to be in place to avoid or minimize the spread of diseases including measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent contract-related labor
- to provide an easily accessible grievance mechanism to raise workplace concerns

Where the contract form used is FIDIC, the Borrower (as the Employer) will be represented by the Engineer (also referred to in this note as the Supervising Engineer). The Engineer will be authorized to exercise authority specified in or necessarily implied from the construction contract. In such cases, the Engineer (through its staff on site) will be the interface between the PIU and the Contractor. It is important therefore to understand the scope of the Engineer's responsibilities. It is also important to recognize that in the case of infectious diseases such as COVID-19, project management – through the Contractor/subcontractor hierarchy – is only as effective as the weakest link. A thorough review of management procedures/plans as they will be implemented through the entire contractor hierarchy is important. Existing contracts provide the outline of this structure; they form the basis for the Borrower to understand how proposed mitigation measures will be designed and how adaptive management will be implemented, and to start a conversation with the Contractor on measures to address COVID-19 in the project.

4. WHAT PLANNING SHOULD THE BORROWER BE DOING?

Task teams should work with Borrowers (PIUs) to confirm that projects (i) are taking adequate precautions to prevent or minimize an outbreak of COVID-19, and (ii) have identified what to do in the event of an outbreak. Suggestions on how to do this are set out below:

- The PIU, either directly or through the Supervising Engineer, should request details in writing from the main Contractor of the measures being taken to address the risks. As stated in Section 3, the construction contract should include health and safety requirements, and these can be used as the basis for identification of, and requirements to implement, COVID-19 specific measures. The measures may be presented as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures. The measures may be reflected in revisions to the project's health and safety manual. This request should be made in writing (following any relevant procedure set out in the contract between the Borrower and the contractor).

- In making the request, it may be helpful for the PIU to specify the areas that should be covered. This should include the items set out in Section 5 below and take into account current and relevant

guidance provided by national authorities, WHO and other organizations. See the list of references in the Annex to this note.

- The PIU should require the Contractor to convene regular meetings with the project health and safety specialists and medical staff (and where appropriate the local health authorities), and to take their advice in designing and implementing the agreed measures.

- Where possible, a senior person should be identified as a focal point to deal with COVID-19 issues. This can be a work supervisor or a health and safety specialist. This person can be responsible for coordinating preparation of the site and making sure that the measures taken are communicated to the workers, those entering the site and the local community. It is also advisable to designate at least one back-up person, in case the focal point becomes ill; that person should be aware of the arrangements that are in place.

- On sites where there are a number of contractors and therefore (in effect) different work forces, the request should emphasize the importance of coordination and communication between the different parties. Where necessary, the PIU should request the main contractor to put in place a protocol for regular meetings of the different contractors, requiring each to appoint a designated staff member (with back up) to attend such meetings. If meetings cannot be held in person, they should be conducted using whatever IT is available. The effectiveness of mitigation measures will depend on the weakest implementation, and therefore it is important that all contractors and sub-contractors understand the risks and the procedure to be followed.

- The PIU, either directly or through the Supervising Engineer, may provide support to projects in identifying appropriate mitigation measures, particularly where these will involve interface with local services, in particular health and emergency services. In many cases, the PIU can play a valuable role in connecting project representatives with local Government agencies, and helping coordinate a strategic response, which takes into account the availability of resources. To be most effective, projects should consult and coordinate with relevant Government agencies and other projects in the vicinity.

- Workers should be encouraged to use the existing project grievance mechanism to report concerns relating to COVID-19, preparations being made by the project to address COVID-19 related issues, how procedures are being implemented, and concerns about the health of their co-workers and other staff.

5. WHAT SHOULD THE CONTRACTOR COVER?

The Contractor should identify measures to address the COVID-19 situation. What will be possible will depend on the context of the project: the location, existing project resources, availability of supplies, capacity of local emergency/health services, the extent to which the virus already exist in the area. A systematic approach to planning, recognizing the challenges associated with rapidly changing circumstances, will help the project put in place the best measures possible to address the situation. As discussed above, measures to address COVID-19 may be presented in different ways (as a contingency plan, as an extension of the existing project emergency and preparedness plan or as standalone procedures). PIUs and contractors should refer to guidance issued by relevant authorities, both national

and international (e.g. WHO), which is regularly updated (see sample References and links provided in the Annex).

Addressing COVID-19 at a project site goes beyond occupational health and safety, and is a broader project issue which will require the involvement of different members of a project management team. In many cases, the most effective approach will be to establish procedures to address the issues, and then to ensure that these procedures are implemented systematically. Where appropriate given the project context, a designated team should be established to address COVID-19 issues, including PIU representatives, the Supervising Engineer, management (e.g. the project manager) of the contractor and sub-contractors, security, and medical and OHS professionals. Procedures should be clear and straightforward, improved as necessary, and supervised and monitored by the COVID-19 focal point(s). Procedures should be documented, distributed to all contractors, and discussed at regular meetings to facilitate adaptive management. The issues set out below include a number that represent expected good workplace management but are especially pertinent in preparing the project response to COVID-19.

(a) ASSESSING WORKFORCE CHARACTERISTICS

Many construction sites will have a mix of workers e.g. workers from the local communities; workers from a different part of the country; workers from another country. Workers will be employed under different terms and conditions and be accommodated in different ways. Assessing these different aspects of the workforce will help in identifying appropriate mitigation measures:

- The Contractor should prepare a detailed profile of the project work force, key work activities, schedule for carrying out such activities, different durations of contract and rotations (e.g. 4 weeks on, 4 weeks off).
- This should include a breakdown of workers who reside at home (i.e. workers from the community), workers who lodge within the local community and workers in on-site accommodation. Where possible, it should also identify workers that may be more at risk from COVID-19, those with underlying health issues or who may be otherwise at risk.
- Consideration should be given to ways in which to minimize movement in and out of site. This could include lengthening the term of existing contracts, to avoid workers returning home to affected areas, or returning to site from affected areas.
- Workers accommodated on site should be required to minimize contact with people near the site, and in certain cases be prohibited from leaving the site for the duration of their contract, so that contact with local communities is avoided.
- Consideration should be given to requiring workers lodging in the local community to move to site accommodation (subject to availability) where they would be subject to the same restrictions.
- Workers from local communities, who return home daily, weekly or monthly, will be more difficult to manage. They should be subject to health checks at entry to the site (as set out above) and at some point, circumstances may make it necessary to require them to either use accommodation on site or not to come to work.

(b) ENTRY/EXIT TO THE WORK SITE AND CHECKS ON COMMENCEMENT OF WORK

Entry/exit to the work site should be controlled and documented for both workers and other parties, including support staff and suppliers. Possible measures may include:

- Establishing a system for controlling entry/exit to the site, securing the boundaries of the site, and establishing designating entry/exit points (if they do not already exist). Entry/exit to the site should be documented.
- Training security staff on the (enhanced) system that has been put in place for securing the site and controlling entry and exit, the behaviors required of them in enforcing such system and any COVID - 19 specific considerations.
- Training staff who will be monitoring entry to the site, providing them with the resources they need to document entry of workers, conducting temperature checks and recording details of any worker that is denied entry.
- Confirming that workers are fit for work before they enter the site or start work. While procedures should already be in place for this, special attention should be paid to workers with underlying health issues or who may be otherwise at risk. Consideration should be given to demobilization of staff with underlying health issues.
- Checking and recording temperatures of workers and other people entering the site or requiring self-reporting prior to or on entering the site.
- Providing daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures, using demonstrations and participatory methods.
- During the daily briefings, reminding workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor or the COVID-19 focal point if they have symptoms or are feeling unwell.
- Preventing a worker from an affected area or who has been in contact with an infected person from returning to the site for 14 days or (if that is not possible) isolating such worker for 14 days.
- Preventing a sick worker from entering the site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

(c) GENERAL HYGIENE

Requirements on general hygiene should be communicated and monitored, to include:

- Training workers and staff on site on the signs and symptoms of COVID-19, how it is spread, how to protect themselves (including regular handwashing and social distancing) and what to do if they or other people have symptoms (for further information see WHO COVID-19 advice for the public).
- Placing posters and signs around the site, with images and text in local languages.
- Ensuring handwashing facilities supplied with soap, disposable paper towels and closed waste bins exist at key places throughout site, including at entrances/exits to work areas; where there is a toilet, canteen or food distribution, or provision of drinking water; in worker accommodation; at waste stations; at stores; and in common spaces. Where handwashing facilities do not exist or are not adequate, arrangements should be made to set them up. Alcohol based sanitizer (if available, 60-95% alcohol) can also be used.
- Review worker accommodations, and assess them in light of the requirements set out in IFC/EBRD guidance on Workers' Accommodation: processes and standards, which provides valuable guidance as to good practice for accommodation.
- Setting aside part of worker accommodation for precautionary self-quarantine as well as more formal isolation of staff who may be infected (see paragraph (f)).

(d) CLEANING AND WASTE DISPOSAL

Conduct regular and thorough cleaning of all site facilities, including offices, accommodation, canteens, common spaces. Review cleaning protocols for key construction equipment (particularly if it is being operated by different workers). This should include:

- Providing cleaning staff with adequate cleaning equipment, materials and disinfectant.
- Review general cleaning systems, training cleaning staff on appropriate cleaning procedures and appropriate frequency in high use or high-risk areas.
- Where it is anticipated that cleaners will be required to clean areas that have been or are suspected to have been contaminated with COVID-19, providing them with appropriate PPE: gowns or aprons, gloves, eye protection (masks, goggles or face screens) and boots or closed work shoes. If appropriate PPE is not available, cleaners should be provided with best available alternatives.
- Training cleaners in proper hygiene (including handwashing) prior to, during and after conducting cleaning activities; how to safely use PPE (where required); in waste control (including for used PPE and cleaning materials).
- Any medical waste produced during the care of ill workers should be collected safely in designated containers or bags and treated and disposed of following relevant requirements (e.g., national, WHO). If open burning and incineration of medical wastes is necessary, this should be for as limited a duration as possible. Waste should be reduced and segregated, so that only the smallest amount of waste is incinerated (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19).

(e) ADJUSTING WORK PRACTICES

Consider changes to work processes and timings to reduce or minimize contact between workers, recognizing that this is likely to impact the project schedule. Such measures could include:

- Decreasing the size of work teams.
- Limiting the number of workers on site at any one time.
- Changing to a 24-hour work rotation.
- Adapting or redesigning work processes for specific work activities and tasks to enable social distancing, and training workers on these processes.
- Continuing with the usual safety trainings, adding COVID-19 specific considerations. Training should include proper use of normal PPE. While as of the date of this note, general advice is that construction workers do not require COVID-19 specific PPE, this should be kept under review (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- Reviewing work methods to reduce use of construction PPE, in case supplies become scarce or the PPE is needed for medical workers or cleaners. This could include, e.g. trying to reduce the need for dust masks by checking that water sprinkling systems are in good working order and are maintained or reducing the speed limit for haul trucks.
- Arranging (where possible) for work breaks to be taken in outdoor areas within the site.
- Consider changing canteen layouts and phasing meal times to allow for social distancing and phasing access to and/or temporarily restricting access to leisure facilities that may exist on site, including gyms.

- At some point, it may be necessary to review the overall project schedule, to assess the extent to which it needs to be adjusted (or work stopped completely) to reflect prudent work practices, potential exposure of both workers and the community and availability of supplies, taking into account Government advice and instructions.

(f) PROJECT MEDICAL SERVICES

Consider whether existing project medical services are adequate, taking into account existing infrastructure (size of clinic/medical post, number of beds, isolation facilities), medical staff, equipment and supplies, procedures and training. Where these are not adequate, consider upgrading services where possible, including:

- Expanding medical infrastructure and preparing areas where patients can be isolated. Guidance on setting up isolation facilities is set out in WHO interim guidance on considerations for quarantine of individuals in the context of containment for COVID-19). Isolation facilities should be located away from worker accommodation and ongoing work activities. Where possible, workers should be provided with a single well-ventilated room (open windows and door). Where this is not possible, isolation facilities should allow at least 1 meter between workers in the same room, separating workers with curtains, if possible. Sick workers should limit their movements, avoiding common areas and facilities and not be allowed visitors until they have been clear of symptoms for 14 days. If they need to use common areas and facilities (e.g. kitchens or canteens), they should only do so when unaffected workers are not present and the area/facilities should be cleaned prior to and after such use.
- Training medical staff, which should include current WHO advice on COVID-19 and recommendations on the specifics of COVID-19. Where COVID-19 infection is suspected, medical providers on site should follow WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected.
- Training medical staff in testing, if testing is available.
- Assessing the current stock of equipment, supplies and medicines on site, and obtaining additional stock, where required and possible. This could include medical PPE, such as gowns, aprons, medical masks, gloves, and eye protection. Refer to WHO guidance as to what is advised (for further information see WHO interim guidance on rational use of personal protective equipment (PPE) for COVID-19).
- If PPE items are unavailable due to world-wide shortages, medical staff on the project should agree on alternatives and try to procure them. Alternatives that may commonly be found on constructions sites include dust masks, construction gloves and eye goggles. While these items are not recommended, they should be used as a last resort if no medical PPE is available.
- Ventilators will not normally be available on work sites, and in any event, intubation should only be conducted by experienced medical staff. If a worker is extremely ill and unable to breathe properly on his or her own, they should be referred immediately to the local hospital (see (g) below).
- Review existing methods for dealing with medical waste, including systems for storage and disposal (for further information see WHO interim guidance on water, sanitation and waste management for COVID-19, and WHO guidance on safe management of wastes from health-care activities).

(g) LOCAL MEDICAL AND OTHER SERVICES

Given the limited scope of project medical services, the project may need to refer sick workers to local medical services. Preparation for this includes:

- Obtaining information as to the resources and capacity of local medical services (e.g. number of beds, availability of trained staff and essential supplies).
- Conducting preliminary discussions with specific medical facilities, to agree what should be done in the event of ill workers needing to be referred.
- Considering ways in which the project may be able to support local medical services in preparing for members of the community becoming ill, recognizing that the elderly or those with pre-existing medical conditions require additional support to access appropriate treatment if they become ill.
- Clarifying the way in which an ill worker will be transported to the medical facility, and checking availability of such transportation.
- Establishing an agreed protocol for communications with local emergency/medical services.
- Agreeing with the local medical services/specific medical facilities the scope of services to be provided, the procedure for in-take of patients and (where relevant) any costs or payments that may be involved.
- A procedure should also be prepared so that project management knows what to do in the unfortunate event that a worker ill with COVID-19 dies. While normal project procedures will continue to apply, COVID-19 may raise other issues because of the infectious nature of the disease. The project should liaise with the relevant local authorities to coordinate what should be done, including any reporting or other requirements under national law.

(h) INSTANCES OR SPREAD OF THE VIRUS

WHO provides detailed advice on what should be done to treat a person who becomes sick or displays symptoms that could be associated with the COVID-19 virus (for further information see WHO interim guidance on infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected). The project should set out risk-based procedures to be followed, with differentiated approaches based on case severity (mild, moderate, severe, critical) and risk factors (such as age, hypertension, diabetes) (for further information see WHO interim guidance on operational considerations for case management of COVID-19 in health facility and community). These may include the following:

- If a worker has symptoms of COVID-19 (e.g. fever, dry cough, fatigue) the worker should be removed immediately from work activities and isolated on site.
- If testing is available on site, the worker should be tested on site. If a test is not available at site, the worker should be transported to the local health facilities to be tested (if testing is available).
- If the test is positive for COVID-19 or no testing is available, the worker should continue to be isolated. This will either be at the work site or at home. If at home, the worker should be transported to their home in transportation provided by the project.
- Extensive cleaning procedures with high-alcohol content disinfectant should be undertaken in the area where the worker was present, prior to any further work being undertaken in that area. Tools used by the worker should be cleaned using disinfectant and PPE disposed of.
- Co-workers (i.e. workers with whom the sick worker was in close contact) should be required to stop work, and be required to quarantine themselves for 14 days, even if they have no symptoms.

- Family and other close contacts of the worker should be required to quarantine themselves for 14 days, even if they have no symptoms.
- If a case of COVID-19 is confirmed in a worker on the site, visitors should be restricted from entering the site and worker groups should be isolated from each other as much as possible.
- If workers live at home and has a family member who has a confirmed or suspected case of COVID-19, the worker should quarantine themselves and not be allowed on the project site for 14 days, even if they have no symptoms.
- Workers should continue to be paid throughout periods of illness, isolation or quarantine, or if they are required to stop work, in accordance with national law.
- Medical care (whether on site or in a local hospital or clinic) required by a worker should be paid for by the employer.

(i) CONTINUITY OF SUPPLIES AND PROJECT ACTIVITIES

Where COVID-19 occurs, either in the project site or the community, access to the project site may be restricted, and movement of supplies may be affected.

- Identify back-up individuals, in case key people within the project management team (PIU, Supervising Engineer, Contractor, sub-contractors) become ill, and communicate who these are so that people are aware of the arrangements that have been put in place.
- Document procedures, so that people know what they are, and are not reliant on one person's knowledge.
- Understand the supply chain for necessary supplies of energy, water, food, medical supplies and cleaning equipment, consider how it could be impacted, and what alternatives are available. Early pro-active review of international, regional and national supply chains, especially for those supplies that are critical for the project, is important (e.g. fuel, food, medical, cleaning and other essential supplies). Planning for a 1-2 month interruption of critical goods may be appropriate for projects in more remote areas.
- Place orders for/procure critical supplies. If not available, consider alternatives (where feasible).
- Consider existing security arrangements, and whether these will be adequate in the event of interruption to normal project operations.
- Consider at what point it may become necessary for the project to significantly reduce activities or to stop work completely, and what should be done to prepare for this, and to re-start work when it becomes possible or feasible.

(j) TRAINING AND COMMUNICATION WITH WORKERS

Workers need to be provided with regular opportunities to understand their situation, and how they can best protect themselves, their families and the community. They should be made aware of the procedures that have been put in place by the project, and their own responsibilities in implementing them.

- It is important to be aware that in communities close to the site and amongst workers without access to project management, social media is likely to be a major source of information. This raises the importance of regular information and engagement with workers (e.g. through training, town halls, tool boxes) that emphasizes what management is doing to deal with the risks of COVID-19. Allaying fear is an important aspect of work force peace of mind and business continuity. Workers should be given an opportunity to ask questions, express their concerns, and make suggestions.

- Training of workers should be conducted regularly, as discussed in the sections above, providing workers with a clear understanding of how they are expected to behave and carry out their work duties.
- Training should address issues of discrimination or prejudice if a worker becomes ill and provide an understanding of the trajectory of the virus, where workers return to work.
- Training should cover all issues that would normally be required on the work site, including use of safety procedures, use of construction PPE, occupational health and safety issues, and code of conduct, taking into account that work practices may have been adjusted.
- Communications should be clear, based on fact and designed to be easily understood by workers, for example by displaying posters on handwashing and social distancing, and what to do if a worker displays symptoms.

(k) COMMUNICATION AND CONTACT WITH THE COMMUNITY

Relations with the community should be carefully managed, with a focus on measures that are being implemented to safeguard both workers and the community. The community may be concerned about the presence of non-local workers, or the risks posed to the community by local workers presence on the project site. The project should set out risk-based procedures to be followed , which may reflect WHO guidance (for further information see WHO Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response). The following good practice should be considered:

- Communications should be clear, regular, based on fact and designed to be easily understood by community members.
- Communications should utilize available means. In most cases, face-to-face meetings with the community or community representatives will not be possible. Other forms of communication should be used; posters, pamphlets, radio, text message, electronic meetings. The means used should take into account the ability of different members of the community to access them, to make sure that communication reaches these groups.
- The community should be made aware of procedures put in place at site to address issues related to COVID-19. This should include all measures being implemented to limit or prohibit contact between workers and the community. These need to be communicated clearly, as some measures will have financial implications for the community (e.g. if workers are paying for lodging or using local facilities). The community should be made aware of the procedure for entry/exit to the site, the training being given to workers and the procedure that will be followed by the project if a worker becomes sick.
- If project representatives, contractors or workers are interacting with the community, they should practice social distancing and follow other COVID-19 guidance issued by relevant authorities, both national and international (e.g. WHO).

6. EMERGENCY POWERS AND LEGISLATION

Many Borrowers are enacting emergency legislation. The scope of such legislation, and the way it interacts with other legal requirements, will vary from country to country. Such legislation can cover a range of issues, for example:

- Declaring a public health emergency

- Authorizing the use of police or military in certain activities (e.g. enforcing curfews or restrictions on movement)
- Ordering certain categories of employees to work longer hours, not to take holiday or not to leave their job (e.g. health workers)
- Ordering non-essential workers to stay at home, for reduced pay or compulsory holiday

Except in exceptional circumstances (after referral to the World Bank's Operations Environmental and Social Review Committee (OESRC)), projects will need to follow emergency legislation to the extent that these are mandatory or advisable. It is important that the Borrower understands how mandatory requirements of the legislation will impact the project. Teams should require Borrowers (and in turn, Borrowers should request Contractors) to consider how the emergency legislation will impact the obligations of the Borrower set out in the legal agreement and the obligations set out in the construction contracts. Where the legislation requires a material departure from existing contractual obligations, this should be documented, setting out the relevant provisions.

ANNEX

WHO Guidance

Advice for the public

WHO advice for the public, including on social distancing, respiratory hygiene, self-quarantine, and seeking medical advice, can be consulted on this WHO website:
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public

Technical guidance

Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected, issued on 19 March 2020

Coronavirus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health, issued on 18 March 2020

Risk Communication and Community Engagement (RCCE) Action Plan Guidance COVID-19 Preparedness and Response, issued on 16 March 2020

Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19), issued on 19 March 2020

Operational considerations for case management of COVID-19 in health facility and community, issued on 19 March 2020

Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19), issued on 27 February 2020

Getting your workplace ready for COVID-19, issued on 19 March 2020

Water, sanitation, hygiene and waste management for COVID-19, issued on 19 March 2020

Safe management of wastes from health-care activities issued in 2014

Advice on the use of masks in the community, during home care and in healthcare settings in the context of the novel coronavirus (COVID-19) outbreak, issued on March 19, 2020

ILO GUIDANCE

ILO Standards and COVID-19 FAQ, issued on March 23, 2020 (provides a compilation of answers to most frequently asked questions related to international labor standards and COVID-19)

MFI GUIDANCE

IDB Invest Guidance for Infrastructure Projects on COVID-19: A Rapid Risk Profile and Decision Framework

Annex 4: CEA- Licensed e-waste Collectors in Sri Lanka

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மத்திய சுற்றாடல் அதிகாரசபை
Central Environmental Authority

Licensed E-Waste Collectors in Sri Lanka

No	Address of the Industry	Contact	Types of E-waste	Date of Expiry
1	**British Ceylon Produce Export Co.(Pvt) Ltd** *Operational Address:* No.573, Sudharma Mawatha, Wanawasala, Kelaniya.	Mr. Hisham Abbas Mobile: 077 7958247 Office : 0114 717360 Mail: hafeel.abbas@yahoo.com teacom@sltnet.lk	E-Waste Excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	27.09.2022
2	**Ceylon Waste Management (Pvt) Ltd** *Operational Address:* 61/1/F2, Kelanimulla, Kelaniya.	Ms. Sewwandi Ranasinghe Director Mobile: 0777 999247 Ms. Asanga Oputha Tel : 0114 336336 Mail :info@ewaste.lk	E-Waste Including CFL Bulbs Fluorescent Bulbs & CRT Monitors/TV	19.08.2022
3	**Cleantech (Pvt) Ltd** *Operational Address:* No.281/1, Devamiththa Place, Heiyanthuduwa, Sapugaskanda.	Mr. Kasun Karunanayake Manager Mobile : 071 5260624 Office : 0112 368768 Mail : kasun.karunanayake@cleantech.lk	E-Waste excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	07.08.2022
4	**Eco - Biz World (Pvt) Ltd** *Operational Address:* 621/3, Wekanda Road, Walgama, Malwana.	Mr. A.G.S. Rukmal Mobile: 077 9129100 Office : 0112 476078 Mail: ebw@ecobizworld.com	E-Waste excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	12.08.2022
5	**Ecogate Lanka Engineering Services** *Operational Address:* No.65/06, WelegodaraRoad, Molligoda, Wadduwa.	Mr. Evton Isaac Mobile: 076-9268879 Office : 0113-675688 Mail: ecogatelanka@gmail.com	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	*Processing*
6	**Evergreen Trading and Marketing (Pvt) Ltd** *Operational Address:* No.45, Muthuraja Mawatha, Mabola, Wattala	Mr. K.Ashwin Director Mobile: 0704373243 Office : 0758918919	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	16.12.2022
7	**Hiru Eco Waste Company** *Operational Address:* No.213, Bolabotuwa, Bandaragama	Mr. M.L.V.I. Perera Mobile: 0762918554 0704429245 Mail: ecowastehiru@gmail.com	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	03.10.2022

8	**Infinity Green International (Pvt) Ltd** ***Office Address:*** 454, Kandy Road, Kelaniya. ***Operational Address:*** No. 368, New Hunupitiya Road, Dalugama, Kelaniya.	Mr. Sanka Samudaya Mobile: 077 3433183 Office: 0115 923443 Mail: sanka@infinityzone.lk	E-Waste Excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	*Processing*
9	**Inova Environmental Services (Pvt) Ltd** ***Operational Address:*** No. Galaboda Road, Wewalpanawa, Padukka.	Mr. Ayal Piyathilake Mobile : 0773815989 Office: 0117072323 Mail : ayal.piyathilaka@inovaen.com	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	*Processing*
10	**Insee Eco Cycle Lanka (Pvt) Ltd** ***Office Address:*** 413, R A De Mel Mawatha, Colombo 03. ***Operational Address:*** Preprocessing Facility, PO Box 01, Palavi, Puttalam.	Mr. Sanjeewa Chulakumara Director Office: 0117 800800 Fax : 0112 555434	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	10.05.2022
11	**J F Supplier** ***Operational Address:*** No. 276, Kottawaththa, Mawnella.	Mr. M.S.M. Jawfer Mobile : 077 7789496 Office : 035 2248133 Mail : jfsuppliers@gmail.com Web: www.jfsuppliers.webs.com	E-Waste Excluding CFL Bulbs Fluorescent Bulbs & CRT Monitors	04.05.2022
12	**Moksh Worldwide (Pvt) Ltd** ***Operational Address:*** 93/2, Gothami Mawatha, Welewatte, Wellampitiya.	Mr. Sandeep Chathurvedi Mobile : 077 7733100 075 2550000 Mail: findsandy@live.com	E-Waste Excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	29.12.2021
13	**N.S.Green Links Lanka (Pvt) Ltd** ***Operational Address:*** No. 259, Wewagedara, Divulapitiya.	Mr. Nalin Gunaratne - 071 4066455 Mr. Oshada Weerasinghe - 071 6305184 Telephone: 0112 236366/0115 660300 Email: nalin@greenlink.lk oshada@greenlink.lk	E-Waste Excluding CFL Bulbs, Fluorescent Bulbs & CRT Monitors	03.04.2022
14	**Recotel Lanka (Pvt) Ltd** ***Operational Address:*** 260, Sri Ramanathan Mawatha, Colombo 15.	Mr. Susantha Muhandiram Mobile : 0770090067 Mail: susantha@recotellanka.com	E-Waste Excluding CFL Bulbs Fluorescent Bulbs & CRT Monitors	23.08.2022
15	**SCT Holdings (Pvt) Ltd** ***Operational Address:*** 203/02, Horana Road, Kottawa.	Mr. Priyantha Basnayaka Mobile : 077 3274682 Office: 0112844228 Mail: sctholdings@gmail.com	E-Waste Excluding CFL Bulbs, Fluorescent bulbs & CRT monitors	20.03.2022
16	**Think Green (Pvt) Ltd** ***Operational Address:*** No.57/33, Muthuwella Mawatha, Colombo 15.	Mr. Shivahar Muthuramalingam Mobile : 0773 733301, 0777323885 Office: 0112 522 111 Fax: 0112 520 015	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	*Processing*
17	**Waymarque(Pvt) Ltd** ***Operational Address:*** No.264/A/2, Patiyawala, Uswetakeiyawa.	Mr. J. Gabriel Mobile: 077 7221112	E-Waste Excluding CFL Bulbs, Fluorescent bulbs, & CRT monitors	12.12.2022