



From
the People of Japan



Ministry of Mines and Energy (MME)

Terms of Reference (ToR)

1. Assignment Information

Project	Inclusive Renewable Energy Access in Rural Area (IREARA)
Title	Independent Evaluator to assess the progress of civil works and quality assurance of the Solar Mini-Grids being implemented in Kampong Chhnang and Ratanakiri Provinces
Duty Station	Phnom Penh with travel to Kampong Chhnang, and Ratanakiri Provinces
Type of Contract	Individual Contractor (IC) or Firm
Language Required	Khmer and English
Expected Starting Date	01 May 2023
Contract Duration:	20 days
Deadline for submission	31 March 2023

2. Project Background

Inclusive Renewable Energy Access in Rural Area (IREARA) is a joint initiative between the Ministry of Mines and Energy (MME) and the United Nations development Programme (UNDP) with the financial support from the Government of Japan, under implementation from March 2022 to February 2024. The overall objective of the project is to support the Royal Government of Cambodia (RGC) in closing its electrification gap by providing remaining off-grid villages with affordable and reliable electricity access using renewable energy mini-grids to achieve its universal electrification target and mitigate the impacts of climate change as the country recover from COVID-19 pandemic. The project is implementing solar mini-grids in the remaining “hard to reach” off-grid villages/communities on the islands of Tonle Sap Lake and Mekong River, and remote communities in Ratanakiri Provinces.

The Ministry of Mines and Energy (MME), with the mandate to deliver the electricity access to all in Cambodia, through the General Department of Energy (GDE) and UNDP have taken lead role in the selection of villages, design of solar mini-grid system, and its installation.

In December 2022, after a thorough Invitation to Bid (ITB) process, the project had contracted a local firm to supply required material and install six (6) systems of solar mini-grids in Kampong Chhnang and Ratanakiri. The Purchase Order (PO) is between UNDP and the Contractor (UNDP Contractor). The UNDP Contractor has started the installation of mini-grids and plans to complete systems installation by March in Ratanakiri province and by June in Kampong Chhnang province. The details of the system including locations are given in **Annex 1**.

MME/GDE is looking to contract an independent certified engineer (Independent Evaluator) to inspect, evaluate and assess the progress of civil works and quality assurance of the solar mini-grids as in the PO between UNDP and the Contractor.

3. Scope of Work/Description

The objective of the assignment is to check and inspect the delivery of goods as per the technical specifications/bill of materials at the project sites, and quality assurance of installed solar mini-grids including civil works as in the PO. **Annex 1** provide details of technical specifications/bill of materials and locations of delivery.

The Independent Evaluator will perform the following duties:

- A. Conduct Acceptance Act of delivery of Received Goods and Services for supply and installation of the solar mini-grids in each location as per Lot as in the PO. The Acceptance Act shall follow standard form provided by UNDP as in the **Annex 2**.
- Prepare Acceptance Act for each location/Lot
 - Check/inspect the delivery at place (DAP) of goods and services in each location/lot
 - Each Acceptance Act shall be signed as the site by the Independent Evaluator, representatives of MME/GDE and UNDP, Contractor, Local Authority, and relevant stakeholders.
- B. Produce final report based on field inspection missions, and shall contain the following information:
- Quality Assurance: On regular basis, in coordination with UNDP Contractor, MME and UNDP; Independent Evaluator travels to the sites to verify the progress of mini-grids installation and produce a report following the mission.
 - Civil works verification: Independent Evaluator shall check and ensure the rigidity of the system built at each location and as per lot. Climate proofing of this infrastructure is important, specifically in the case of mini-grids in Kampong Chhnang province considering the risk of flooding. Key infrastructure are solar PV array, powerhouse, electrical poles, transmission cables, boxes that host electrical meters, streetlights, lightning arrester etc.
 - Testing and commissioning of the mini-grids: Independent Evaluator shall witness the testing and commissioning of each solar AC mini-grid, battery management system, electrical current (Amp and Volt) at the middle and last grid point, streetlights, etc.
 - Safety and environmental verification: Independent Evaluator shall identify any potential safety concerns/risks for local electrical users, any environmental issues arise from the development of solar AC mini-grid in the community.

4. Outputs/Deliverables:

The table below list the main deliverables and estimated timeframes:

N	Deliverables/Outputs	Estimated Duration to Complete	Target Due Dates	Review and Approvals Required
1	2 Acceptance Acts for delivery of goods and services in Ratanakiri Province	5 days	15 May 2023	MME/GDE
2	4 Acceptance Acts for delivery of goods and services in Kampong Chhnang Province	8 days	30 June 2023	
3	Final Report including quality assurance reports produced at regular intervals from field missions as annexures	7 days	31 July 2023	
Total # of Days:		20 working days		

5. Payment Milestone

The consultant/firm will be paid on a lump sum basis under the following instalments:

No	Outputs/Deliveries	Payment Schedule	Payment Amount
1	Upon satisfactory completion of deliverable 1 and 2	30 May 2023	50%
2	Upon satisfactory completion of final report	30 June 2023	50%

6. Institutional Arrangement

The consultant will work under direct guidance from Project Director and team at the MME/GDE and technical supervision from UNDP Cambodia

7. Duration of the Work and Duty Station

The consultant/firm will work for 20 working days covering the period of 1st May 2023 to 31st July 2023. The duty station of this assignment is Phnom Penh with expected travel to project sites in Kampong Chhnang and Ratanakiri provinces to perform the inspection.

During the mission to provinces, consultant/firm shall cover own travel cost and other expenses.

8. Minimum Qualifications of the Individual Contractor

Education:	<ul style="list-style-type: none">• Master's degree in engineering, civil, energy, applied sciences, or other relevant areas.
Experience:	<ul style="list-style-type: none">• At least 5 years of experience in civil works or electrical system/solar energy/energy audit, with a focus on design, installation, basic operation, maintenance, troubleshooting, and repair of mini-grids
Language Requirement:	<ul style="list-style-type: none">▪ Fluency in Khmer and English (spoken and written).
Competencies	<p>Corporate competencies:</p> <ul style="list-style-type: none">• Have experience working with the government agencies• Experience of inspection of civil work and electrical system, and development of solar energy system• demonstrates integrity, UN's values and ethical standards.• displays cultural, gender, religion, race, nationality and age sensitivity and adaptability, especially toward gender sensitivity, indigenous communities, and vulnerable people. <p>Functional competencies:</p> <ul style="list-style-type: none">• excellent analytical and research skills.• excellent drafting skills.• ability to grasp the development context/challenges in the country.• strong interpersonal skills, communication and diplomatic skills.• strong facilitation, presentation and public speaking skills.• ability to work under pressure and tight deadlines.

9. Criteria for Evaluation

Technical Evaluation Criteria	Obtainable Score
Master's degree in engineering, civil, energy, applied sciences, or other relevant areas.	15
At least 5 years of experience in civil works or electrical system/solar energy/energy audit, with a focus on design, installation, basic operation, maintenance, troubleshooting, and repair of mini-grids	30

Technical Evaluation Criteria	Obtainable Score
Inspection and assessment of civil work and electrical system, ability to plan and deliver work on time	30
Good understanding and/or direct work experience with government agencies such as MME, local communities, local government institutions, development agencies such as international organization and/or national or international NGOs, with private sector	20
Fluency in Khmer and English (spoken and written)	5
Total Obtainable Score:	100

Annex 1: Locations and Technical Specifications of the System

- **Lot 1: Damnak Reach, Kampong Preah Kokir, Kampong Chhnang**

No.	Description	Qty	Unit
1	Solar Panel 550 W - CE, ISO Certificate - Output Peak Power - 550 Wp - Warranty 20 year	38.50	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 3 meters	70	pcs
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/clips/accessory/safety box	140	meter
4	Pure Sine Wave Solar Hybrid Inverter 50kW - 3 phase, unbalanced load - Total AC power output 50kW max 380 V/ 220V-50Hz - LCD Display - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand as Inverter company) - Capacity: 80 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage : 4m w x 4m L x 2m h wall, 4m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go into room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	1804	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	305	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 220V Single phase Din rail over/under voltage current protection RS485;	70	pcs
10	EDC power distribution box	18	pcs
11	Differential circuit breaker, shock life protection, 220V	70	pcs
12	Reinforced concrete electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 35 meters from each other - Provide pole guys and anchors where and as required	23	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrestor and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	4	pcs
15	Automatic LED Streetlighting 65W	12	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

- **Lot 2: Pralay Meas, Pralay Meas, Kampong Chhnang**

No.	Description	Qty	Unit
1	Solar Panel 550 Wp - CE, ISO Certificate - Output Peak Power - 550 Wp - Warranty 20 year	121.00	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 3 meters	220	pcs
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	440	meter
4	Pure Sine Wave Solar Hybrid Inverter 120kW - 3 phase, unbalanced load - Total AC power output 120kW max 380V - 220V-50Hz - LCD Display -Flood warning alarm - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand as Inverter company) - Capacity: 240 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage : 4m w x 4m L x 2m h wall, 3m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go in to room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	2530	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	390	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 220V Single phase Din rail over/under voltage current protection RS485;	200	pcs
10	EDC power distribution box	23	pcs
11	Differential circuit breaker, shock life protection, 220V	200	pcs
12	Reinforced concrete electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 35 meters from each other - Provide pole guys and anchors where and as required	30	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrestor and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	5	pcs
15	Automatic LED Streetlighting 65W	15	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

- **Lot 3: Krang Phtel, Pralay Meas, Kampong Chhnang**

No.	Description	Qty	Unit
1	Solar Panel 550 Wp - CE, ISO Certificate - Output Peak Power - 550 Wp - Warranty 20 year	121.00	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 3 meters	220	pcs
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	440	meter
4	Pure Sine Wave Solar Hybrid Inverter 120kW - 3 phase, unbalanced load - Total AC power output 120kW max 380V - 220V-50Hz - LCD Display -Flood warning alarm - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand as Inverter company) - Capacity: 240 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage : 4m w x 4m L x 2m h wall, 3m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go in to room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	2530	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	390	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 220V Single phase Din rail over/under voltage current protection RS485;	200	pcs
10	EDC power distribution box	23	pcs
11	Differential circuit breaker, shock life protection, 220V	200	pcs
12	Reinforced concrete electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 35 meters from each other - Provide pole guys and anchors where and as required	30	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrestor and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	5	pcs
15	Automatic LED Streetlighting 65W	15	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

- **Lot 4: Thnol Chher Teal, Phlov Tuk, Kampong Chhnang**

No.	Description	Qty	Unit
1	Solar Panel 550 Wp - CE, ISO Certificate - Output Peak Power - 550 Wp - Warranty 20 year	121.00	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 3 meters	220	pcs
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	440	meter
4	Pure Sine Wave Solar Hybrid Inverter 120kW - 3 phase, unbalanced load - Total AC power output 120kW max 380V - 220V-50Hz - LCD Display -Flood warning alarm - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand as Inverter company) - Capacity: 240 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage : 4m w x 4m L x 2m h wall, 3m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go in to room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	2530	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	390	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 220V Single phase Din rail over/under voltage current protection RS485;	200	pcs
10	EDC power distribution box	23	pcs
11	Differential circuit breaker, shock life protection, 220V	200	pcs
12	Reinforced concrete electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 35 meters from each other - Provide pole guys and anchors where and as required	30	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrester and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	5	pcs
15	Automatic LED Streetlighting 65W	15	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

- **Lot 5: Phi, Sesan, Ratanakiri**

No.	Description	Qty	Unit
1	Solar Panel 340 Wp - CE, ISO Certificate - Output Peak Power - 340 Wp - Warranty 20 year	23.80	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 1.5 meters	70	pcs
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	140	meter
4	Pure Sine Wave Solar Hybrid Inverter 30kW - 3 phase, unbalanced load - Total AC power output 30 kW max 380V - 220V-50Hz - LCD Display -Flood warning alarm - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand from Inverter company) - Capacity: 60 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage: 4m w x 4m L x 2m h wall, 3m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go in to room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	1540	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	303	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 230V Single phase Din rail over/under voltage current protection RS485	70	pcs
10	EDC power distribution box	18	pcs
11	Differential circuit breaker, shock life protection, 220V	70	pcs
12	Galvanized iron electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 25 meters from each other - Provide pole guys and anchors where and as required	23	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrester and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	4	pcs
15	Automatic LED Streetlighting 65W	12	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

- **Lot 6: Ta Bouk - Mondul Yorn, Taveng Leu, Ratanakiri**

No.	Description	Qty	Unit
1	Solar Panel 340 Wp - CE, ISO Certificate - Output Peak Power - 340 Wp - Warranty 20 year	8.84	kWp
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 1.5 meters	26	pcs
3	Solar wire (DC Cable 8mm2) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	52	meter
4	Pure Sine Wave Solar Hybrid Inverter 8kW - unbalanced load - Total AC power output 8kW max 380V - 220V-50Hz - LCD Display - Parallel network available - Overload protection - Short circuit protection - Overheat protection - Certificate: CE-ISO - Lifetime 10-15 years, Warranty 3 year	1	pcs
5	Lithium Battery LiFePO4 (same brand from Inverter company) - Capacity: 20 kWh - BMS Program (Battery Management System) - Lifetime 5000 cycle or 6000cycles - 10-15 years, warranty 5 years	1	pcs
6	Inverter and battery storage : 4m w x 4m L x 2m h wall, 1.5m top posts. Concrete with air circulate holes cover by Stainless steel net to protect mouse, rats go in to room	1	pcs
7	Pure copper AC Cable BYJ 16mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-), - Provide cable clamps, cable tension clamp holders, and other necessary parts for local distribution network	770	meter
8	Pure copper AC Cable BYJ 10mm ² - Cross Linked Polyethylene (XLPE) insulated single core cable for electricity transmission and local distribution network (+) / (-)	182	meter
9	Wi-Fi electricity meter, smart energy meter 5-60 A, 230V Single phase Din rail over/under voltage current protection RS485;	26	pcs
10	EDC power distribution box	11	pcs
11	Differential circuit breaker, shock life protection, 220V	26	pcs
12	Galvanized iron electrical poles with proper foundation structure with cement, sand, and stone - Minimum depth of 1 meter below the ground and 5.5 meter above the ground to provide minimum line-to-ground clearance of 5 meters - Poles must be installed at a distance of 25 meters from each other - Provide pole guys and anchors where and as required	14	pcs
13	Lightning arrester Turkey or France air terminal or equivalent	1	pcs
14	Surge arrestor and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	2	pcs
15	Automatic LED Streetlighting 65W	7	pcs
16	Transportation and installation at the project site		Onetime
17	Training to the personnel		Onetime
18	The 2-years after-sales maintenance		Lumpsum

• **Lot 7: Pa Hoy, Kaoh Pang, Ratanakiri; move to install in Lot 5**

No.	Description	Unit	Qty	Unit Price	Total Price	Revision
1	Solar Panel 330 Wp - CE, ISO Certificate - Output Peak Power - 330 Wp - Warranty 20 year	kWp	13.86	\$400	\$5,544	<ul style="list-style-type: none"> • Move to install at Lot 5 without additional cost to UNDP • This change was accepted in consultation with the Technical Advisor on Energy, Policy Specialist, and Ministry of Mines and Energy (MME)
2	Solar ground mounting structure - including galvanized racks, clamps, connectors to stand, with firm foundation to withstand floods. - Height of the structure from ground must be 2 meters	pcs	42	\$40	\$1,680	<ul style="list-style-type: none"> • Move to install at Lot 5 without additional cost to UNDP • This change was accepted in consultation with the Technical Advisor on Energy, Policy Specialist, and Ministry of Mines and Energy (MME)
3	Solar wire (DC Cable 8mm ²) (+) / (-) - Solar connector MC4 - Battery Cable/ clips/ accessory/safety box	meter	120	\$3	\$360	<ul style="list-style-type: none"> • Move to install at Lot 5 without additional cost to UNDP • This change was accepted in consultation with the Technical Advisor on Energy, Policy Specialist, and Ministry of Mines and Energy (MME)
4	Wi-Fi electricity meter, smart energy meter 5-60 A, 230V Single phase Din rail over/under voltage current protection RS485;	pcs	40	\$40	\$1,600	<ul style="list-style-type: none"> • Not required. • No payment on this item shall be made to IMB • This change was accepted in consultation with the Technical Advisor on Energy, Policy Specialist, and Ministry of Mines and Energy (MME) • This change was agreed with IMB during the field mission
5	Electrical meter box	pcs	15	\$30	\$450	
6	Differential circuit breaker, shock life protection, 220V	pcs	40	\$12	\$480	
7	Lightning arrester early streamer emission (ESE) air terminals	pcs	1	\$1,200	\$1,200	
8	Surge arrestor and ground resistance value of 5.0 Ohms or less from cable power distribution pole to ground	pcs	4	\$140	\$560	
9	Automatic LED Streetlighting 65W	pcs	10	\$60	\$600	
10	Transportation and installation at the project site	Onetime		\$2,256	\$2,256	<ul style="list-style-type: none"> • Remain the same
11	Training to the personnel	Onetime		\$500	\$500	<ul style="list-style-type: none"> • Not needed. • No payment on this item shall be made to IMB • This change was accepted in consultation with the Technical Advisor on Energy, Policy Specialist, and Ministry of Mines and Energy (MME) • This change was agreed with IMB during the field mission
12	The 2-years after-sales maintenance	Lump sum		\$500	\$500	<ul style="list-style-type: none"> • Remain the same

Following the revision of the list of items under Lot 7, UNDP will deduct \$5,390 from the total cost \$ 15,730 (all these excluding VAT of 10%) in the PO13621 with IMB. This was agreed and recorded in the BTOR.

Annex 2: Sample of Acceptance Act Form

Acceptance Act of Received Goods and Services
 Supply, and Installation of Solar AC Mini-grid systems
 in Kampong Chhnang and Ratanakiri Province

Contract/PO No: KHM10-00000xxxxx

Dated: xx/xx/2022

Name of the Vendor:

Location of Delivery:

Bill of Quantity

#	Items	UOM	Qty	CONDITION (COMPLY/ NOT COMPLY)
1				
2				
3				

Goods described above have been certified as correct receipts, delivered, completed installation, and commission of the systems to the satisfaction of the MME/GDE and UNDP in accordance with the contract conditions and requirements.

The payments and final payments are subjected to the contract that includes all liabilities and liquidation, and the contract/PO is subject to closure.

Signature:	.....	.....	.....	.....
Date:	___/___/2023	___/___/2023	___/___/2023	___/___/2023
Name:	.....	.....	.....	.....
Title:	... Independent Evaluator ...	.....	.....	.....
Institution:		Contractor:	On behalf of MME/GDE and UNDP	Local Community: