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Bahan Township, Yangon, 11201

Yangon – 30.09.2026

# Terms of Reference for the Procurement of Solar Panels for MALSE Warehouse and Offices in Aye Thar Yar Industrial Zone, Shan State, Myanmar

## Background and Context

- New Cross Road Asia (NCRA) is procuring solar panels for the CRPGAIN program funded by MALSE.
- MALSE is a Myanmar-registered enterprise operating to strengthen livelihoods, production and market connections in Shan State of Myanmar.
- The CRPGAIN program aims at bolstering maize crop resilience in Shan State, Myanmar. The program focuses on strengthening local agricultural connections to market by providing access to facilities for maize storage, corn dryer service and connection to markets.
- The CRPGAIN operating hub is in a compound that includes a warehouse, offices and corn dryer facilities at Aye Thar Yar Industrial Zone in Shan State.
- The procurement is intended to support the energy needs of the MALSE warehouse and office facilities and contribute to reliable and efficient operation of the CRPGAIN hub.

## Purpose of the Procurement

The purpose of this procurement is to obtain suitable solar panels for the MALSE warehouse and offices located at Aye Thar Yar Industrial Zone, Shan State. The solar panels are intended to provide a reliable renewable-energy solution for the operation of the facilities and to reduce dependence on conventional electricity and/or other energy sources.

The selected supplier will be expected to provide the solar panels in accordance with the approved technical requirements, deliver them to the CRPGAIN operating hub, and provide the documentation, warranty and after-sales support required under the contract.

Where installation, testing and commissioning are included in the supplier's scope, the supplier shall carry out these activities in accordance with the approved technical solution and applicable safety requirements.

## Technical Specifications and Minimum Requirements

The bidder shall propose solar panels that meet or exceed the technical requirements to be specified by NCRA/MALSE.

- 40 KW Rooftop Solar PV System with Hybrid Inverter, Battery Backup, Mounting Structure, Warehouse Structural Upgradation, Site-Wide AC Distribution (Container/Office & Ancillary Spaces), BOS, Cabling, Protection, Civil Works, Installation, Testing, Commissioning & Year-1 O&M

The 40 KW system is sized to support the warehouse's daytime load (lighting, ventilation, office equipment, moisture-control fans) and to provide partial/full backup to the grain dryer's auxiliary loads. Solar generation at 41.76 KWp accounts for typical Shan State irradiance and 5% system losses (cabling, soiling, temperature derating). The hybrid inverter architecture allows simultaneous grid-tie operation, battery charging and backup mode, essential given Myanmar's intermittent grid availability in industrial zone supply. Battery autonomy of 3–4 hours partial load supports continuity through evening warehouse closure procedures and short grid outages. All components are sized with 20% headroom against design load to accommodate seasonal warehouse expansion.

#### A. SOLAR PV MODULES

|     |                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |    |                                                                  |
|-----|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|------------------------------------------------------------------|
| A.1 | Solar PV module — 580W monocrystalline          | Monocrystalline silicon, half-cut cell, 580W (±3%) STC; module efficiency ≥21%; positive power tolerance 0/+5W; PID-resistant; anti-reflective tempered glass front; anodised aluminium frame; IP68 junction box with bypass diodes; MC4-compatible connectors; module dimensions ≈2,278 × 1,135 × 35 mm, mass ≈31.5 kg; mechanical rating ≥2,400 Pa wind / 5,400 Pa front load. 10-year product warranty, 25-year linear performance warranty. Chinese/Indian or equivalent reputed origin. | No. | 72 | Total array: 41.76 KWp DC. 5% DC oversizing accounts for losses. |
| A.2 | MC4 connectors & extension cables (panel-side)  | Pre-fabricated MC4 male-female connector pairs and panel-string extension cables; 4mm <sup>2</sup> PV-rated; UV-stable                                                                                                                                                                                                                                                                                                                                                                       | Set | 1  | For inter-module and string interconnection                      |
| A.3 | Module-level junction boxes & bypass diode kits | Replacement junction boxes and bypass diode spares for field maintenance                                                                                                                                                                                                                                                                                                                                                                                                                     | Set | 1  | Maintenance stock                                                |

#### B. INVERTER & POWER ELECTRONICS

|     |                                                 |                                                                                                                                                                                                                                                                                                                                                                                       |     |   |                                                                      |
|-----|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|----------------------------------------------------------------------|
| B.1 | Hybrid Solar Inverter — 40 KVA / 3-phase        | Hybrid on-grid/off-grid inverter, 40 KVA / 32 kW continuous output, 3-phase 400V AC; integrated MPPT charge controller (4 MPPT inputs minimum); battery interface 192V–240V DC; pure sine-wave output; integrated AC/DC isolation; LCD display + remote monitoring (RS485/Wi-Fi); efficiency ≥97%; IP21. 12-month manufacturer warranty. Chinese/Indian or equivalent reputed origin. | No. | 1 | Single-unit architecture preferred for warranty clarity & monitoring |
| B.2 | Solar charge controller — auxiliary backup MPPT | 60A MPPT solar charge controller as backup auxiliary unit; standalone capability for emergency operation                                                                                                                                                                                                                                                                              | No. | 1 | Redundancy for critical loads                                        |
| B.3 | Inverter remote monitoring kit                  | Wi-Fi / cellular dongle + 1-year cloud monitoring subscription; remote data logging, fault alerts, generation reporting                                                                                                                                                                                                                                                               | Set | 1 | Required for MEAL evidence & donor reporting                         |
| B.4 | Inverter cooling fan kit (spare)                | Spare cooling fan assembly for replacement during preventive maintenance                                                                                                                                                                                                                                                                                                              | Set | 1 | Maintenance stock                                                    |

#### C. BATTERY BANK & STORAGE

|     |                                               |                                                                                                                                                                                                                                                          |     |    |                                                                                                                                                                                |
|-----|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C.1 | Tubular deep-cycle battery — 220 AH / 12V     | Tubular plate technology; 220 AH C20 capacity; 12V nominal; ≥1500 cycles at 50% DoD; low water topping frequency; vent plugs with flame arrestor; terminal type bolted lug. 12-month manufacturer warranty. Chinese/Indian or equivalent reputed origin. | No. | 20 | Bank configuration: 20 nos. in series at 240V DC bus (220AH); inverter battery interface compatible with 192–240V DC range; ~3–4 hr partial-load backup at 8 kW load (50% DoD) |
| C.2 | Battery interconnection cable kit             | Tinned copper interconnect cables with crimped lugs, insulating boots; correctly sized for series-parallel string current; including bus-bar where required                                                                                              | Set | 1  | Pre-fabricated for safety & polarity correctness                                                                                                                               |
| C.3 | Battery rack — galvanised steel, multi-tier   | Hot-dip galvanised steel battery rack, multi-tier configuration for 20 nos. tubular batteries; spill containment tray; ventilation clearance per IEEE 484 guidance                                                                                       | Set | 1  | Custom-fabricated locally                                                                                                                                                      |
| C.4 | Hydrometer, distilled water topping kit & PPE | Battery maintenance kit: hydrometer, distilled water (5L initial fill spare), insulated tools, acid-resistant gloves, face shield, eyewash station bottle                                                                                                | Set | 1  | Operator safety standard                                                                                                                                                       |
| C.5 | Battery temperature compensation sensor       | NTC temperature sensor for compensated charging; cabled to inverter charge controller                                                                                                                                                                    | No. | 1  | Improves battery life in Shan State temperature variation                                                                                                                      |

#### D. MOUNTING STRUCTURE & ROOFTOP CIVIL WORKS

|     |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                           |     |   |                                                                                          |
|-----|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|------------------------------------------------------------------------------------------|
| D.1 | Module mounting structure — galvanised steel rooftop frame | Hot-dip galvanised steel mounting structure (≥80 microns coating); rooftop-mounted on warehouse PEB roof purlins; engineered for ≥150 km/h wind loading and seismic loading per Myanmar National Building Code / MEC seismic zonation for Taunggyi (to be confirmed by structural engineer under E.1); 10° tilt angle optimised for Taunggyi latitude (~20.78°N); module clamps, end clamps, mid clamps, splices included | Set | 1 | Engineered for monsoon wind loads & seismic context                                      |
| D.2 | PEB roof penetration & flashing kits                       | L-foot brackets compatible with PEB roof sheeting, fixed to purlins only; EPDM gaskets; aluminium flashings; sealant; certified weatherproof                                                                                                                                                                                                                                                                              | Set | 1 | Critical to prevent monsoon water ingress                                                |
| D.3 | Rooftop walkway & maintenance access platform              | Anti-skid GI walkway between module rows; maintenance access platform for inverter/junction boxes; safety chain/handrail at roof edge                                                                                                                                                                                                                                                                                     | Set | 1 | O&M safety per OSHA-equivalent standard                                                  |
| D.4 | Earthing/grounding mat — module frames                     | Continuous earthing strip between module frames and structure; tinned copper earthing lugs; bonded to main earthing system                                                                                                                                                                                                                                                                                                | Set | 1 | Lightning & fault protection                                                             |
| D.5 | Rooftop load-distribution interface plates                 | Steel load-spreader plates at PEB purlin connection points where module-cluster attachment loads concentrate                                                                                                                                                                                                                                                                                                              | Lot | 1 | Interface plates at attachment points only; primary member strengthening under Section E |
| D.6 | Cable trays & rooftop conduit                              | Galvanised cable tray (perforated) for rooftop DC cable management; UV-stable PVC conduit at exposed runs; tray supports & cleats                                                                                                                                                                                                                                                                                         | Set | 1 | Cable protection from sun/rain                                                           |
| D.7 | Module cleaning kit                                        | Soft-bristle telescopic brush, deionised water bottle, microfibre cloths, residue remover; for monthly cleaning                                                                                                                                                                                                                                                                                                           | Set | 1 | Maintains generation efficiency                                                          |

## E. WAREHOUSE STRUCTURAL UPGRADATION & ROOF STRENGTHENING

|     |                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |     |                                                                                         |
|-----|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|-----------------------------------------------------------------------------------------|
| E.1 | Structural condition survey, as-built verification & strengthening design | Licensed structural engineer: dimensional as-built survey resolving the recorded discrepancy between the sectional clear span (21.45 m) and the plan column grid (16.5 m × 16.5 m); frame spacing, purlin span and roof pitch measurement; post-earthquake (M7.7, March 2025) integrity and connection inspection; corrosion survey of purlins (150×60×1.8 mm), rafters (I 250×125) and cladding (0.42 mm); load-capacity assessment against PV dead load (≈0.16 kPa over array footprint) in combination with wind (≥150 km/h design check) and MNBC seismic loading; strengthening design drawings, calculations and bar-bending/fabrication schedules | Lot   | 1   | Condition precedent to procurement of Sections A–D equipment                            |
| E.2 | Purlin strengthening within array bays                                    | Supply, fabricate and install sistered/lapped cold-formed purlins (matching 150×60 profile, ≥1.8 mm, pre-galvanised) and/or intermediate purlins between existing lines within PV array bays; bolted to existing/supplementary cleats per E.1 design; zinc-rich touch-up at cut edges and drill points                                                                                                                                                                                                                                                                                                                                                   | metre | 160 | Allowance ≈0.65 t steel; final quantity per E.1 design                                  |
| E.3 | Anti-sag bridging & sag rods — additional rows                            | Additional galvanised sag rods / bridging rows to strengthened purlin lines with tensioning nuts; angle bridging where specified by E.1 design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No.   | 24  | Restores purlin lateral restraint under added load                                      |
| E.4 | Purlin cleats, bolts & connection upgrades                                | Supplementary purlin cleats, grade 8.8 bolt sets and stiffener plates at purlin-to-rafter connections within array bays, per E.1 design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Lot   | 1   | Connection capacity typically governs light purlin retrofits                            |
| E.5 | Rafter & portal frame verification with stiffening allowance              | Verification of I 250×125 rafters, eave members (I 150×75) and H 250×250 columns under combined dead + PV + wind + seismic loading; web/flange stiffeners or haunch plates where the E.1 assessment identifies shortfall                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lot   | 1   | Allowance; primary members expected adequate, purlins govern                            |
| E.6 | Roof sheet remediation & weatherproofing in array zone                    | Replacement allowance for damaged/corroded 0.42 mm cladding sheets within the array zone (≈30 m <sup>2</sup> ); re-fixing with new self-drilling fasteners and EPDM washers; butyl re-sealing of side/end laps beneath arrays; EPDM isolation strips between aluminium rails and steel sheeting (dissimilar-metal separation)                                                                                                                                                                                                                                                                                                                            | Lot   | 1   | Sheet carries no clamp loads; weathertightness restored before module laying            |
| E.7 | Dryer tower & furnace flue interface works                                | Verification and making-good of flashing/weathering at the dryer-tower roof interface at the northern bays; heat-clearance check between furnace flue and nearest modules; demarcation of the PV exclusion zone                                                                                                                                                                                                                                                                                                                                                                                                                                          | Lot   | 1   | Tower stands proud of roof plane; exclusion extent per E.1 survey & I.1 shadow analysis |
| E.8 | Permanent roof access & fall-protection system                            | Certified roof anchor points (8 no.) and horizontal lifeline along the ridge access route; load-tested and certified; complements the D.3 walkway system                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Set   | 1   | Enables safe Year-1+ O&M at height                                                      |
| E.9 | Post-works structural adequacy certification                              | Final inspection and signed structural adequacy certificate by the licensed engineer on completion of E.2–E.8 and prior to module loading (Section A installation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Lot   | 1   | Certificate filed with as-builts (J.2)                                                  |

## F. DC SIDE — CABLING, PROTECTION & DISTRIBUTION

|     |                                                               |                                                                                                                                        |       |     |                                 |
|-----|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------|-----|---------------------------------|
| F.1 | DC solar cable — 6 mm <sup>2</sup> double-insulated PV-rated  | Tinned copper conductor; XLPE/EVA double insulation; UV-stable; halogen-free; rated 1500V DC; 6 mm <sup>2</sup> for module-string runs | metre | 400 | From array to inverter DC input |
| F.2 | DC solar cable — 10 mm <sup>2</sup> double-insulated PV-rated | 10 mm <sup>2</sup> PV-rated DC cable for combiner-to-inverter trunk runs; reduces voltage drop on longer runs                          | metre | 100 | Trunk DC runs                   |

|     |                                                      |                                                                                                                                                                            |     |   |                                        |
|-----|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|----------------------------------------|
| F.3 | DC combiner box — IP65, with surge & fuse protection | Outdoor IP65 combiner box; 4–6 string inputs per box; per-string fuse holders + 15A gPV fuses; DC surge protection device (Type II); DC isolator switch; busbar; pre-wired | No. | 2 | 1 per array zone for fault isolation   |
| F.4 | DC isolator — main array disconnect                  | DC-rated load break switch, 1000V DC, 63A; lockable in OFF position; for safe array isolation during maintenance                                                           | No. | 2 | Statutory safety requirement           |
| F.5 | DC surge protection — Type II SPD                    | DC-side Type II surge protection device for inverter input protection; 1000V DC rated                                                                                      | Set | 1 | Lightning & switching surge protection |
| F.6 | DC fuses & holders — string protection               | 15A gPV fuses with holders; one pair per module string; spare set included                                                                                                 | Set | 1 |                                        |
| F.7 | DC cable lugs, glands & terminations                 | Tinned copper cable lugs (crimped), cable glands (IP68), heat-shrink terminations, cable markers                                                                           | Set | 1 | Workmanship quality essential          |

### G. AC SIDE — CABLING, PROTECTION & DISTRIBUTION

|      |                                                        |                                                                                                                                                                                                                                                                          |       |    |                                                         |
|------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----|---------------------------------------------------------|
| G.1  | AC cable — 4-core × 25 mm <sup>2</sup> armoured copper | 4-core 25 mm <sup>2</sup> XLPE-insulated, armoured copper cable; for inverter AC output to AC distribution panel                                                                                                                                                         | metre | 60 | Inverter to ACDB run                                    |
| G.2  | AC distribution board (ACDB) — solar dedicated         | AC distribution panel with 3-phase MCB main, 4-pole MCBs for sub-circuits, AC surge protection, energy meter mounting; IP54 enclosure                                                                                                                                    | No.   | 1  | Dedicated solar ACDB                                    |
| G.3  | AC isolator — inverter output disconnect               | 4-pole 63A AC isolator switch, lockable; for safe inverter isolation                                                                                                                                                                                                     | No.   | 1  | Statutory safety requirement                            |
| G.4  | AC surge protection device — Type II                   | AC-side Type II SPD for warehouse-side equipment protection                                                                                                                                                                                                              | Set   | 1  |                                                         |
| G.5  | Bidirectional energy meter / net meter                 | Class 1.0 bidirectional energy meter; logs solar generation, grid import, grid export; CT-operated; suitable for grid-tied operation                                                                                                                                     | No.   | 1  | Required for grid-tie operation & future net metering   |
| G.6  | Earthing & lightning protection system                 | Earthing electrode (chemical earth pit, 3m), copper earthing strip, lightning arrester, down conductor, earth resistance test point; bonded to building lightning protection and structural steel frame                                                                  | Set   | 1  | Critical safety system                                  |
| G.7  | AC cable trays, conduit & cable management             | Cable trays from rooftop to ACDB; PVC conduit for indoor runs; cable supports                                                                                                                                                                                            | Set   | 1  |                                                         |
| G.8  | Sub-distribution board — container/office              | IP54 sub-distribution board at the container/office: 4-pole incoming isolator, RCBO-protected final circuits (lighting, sockets, fan and split-AC point), Type II SPD, DIN-rail, circuit labelling                                                                       | No.   | 1  | Fed from the solar ACDB (G.2)                           |
| G.9  | Feeder cable & ducting — ACDB to container/office      | 4-core 10 mm <sup>2</sup> XLPE armoured copper feeder from the solar ACDB to the container/office sub-DB; buried HDPE duct with warning tape across yard hardstanding (or catenary where directed); glands, terminations and reinstatement allowance; run allowance 80 m | metre | 80 | Route and length fixed at the I.1 site survey           |
| G.10 | Container/office internal wiring & fittings            | Complete internal electrification of the container/office: LED panel/batten luminaires (6 no.), 13A socket outlets (8 no.), fan points (2 no.), split-AC point (1 no.), PVC trunking/conduit, switchgear; container body earthed and bonded to the main earthing system  | Set   | 1  | Container bonding is a safety requirement               |
| G.11 | Ancillary spaces & external compound lighting          | LED lighting to ancillary spaces (toilet block, loading front) and external security floodlights (6 no., ≥50W LED, photocell-controlled) on the warehouse fascia/gable; weatherproof switching and wiring                                                                | Set   | 1  | Other compound spaces confirmed at the I.1 walk-through |

## H. MONITORING, METERING & CONTROL

|     |                                          |                                                                                                                                                        |     |   |                                             |
|-----|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---------------------------------------------|
| H.1 | Solar generation monitoring system       | Plant-level monitoring with web/mobile dashboard; logs DC/AC generation, performance ratio, battery state of charge, alerts; 1-year cloud subscription | Set | 1 | Required for donor reporting; supports MEAL |
| H.2 | Smart energy meters — load monitoring    | Sub-metering at warehouse, dryer auxiliary, container/office and ancillary/yard circuits to attribute consumption; Modbus-RTU compatible               | No. | 4 | Supports cost-allocation by service line    |
| H.3 | Local display panel — operator interface | Wall-mounted operator display with real-time generation, battery status, fault alerts; for warehouse staff visibility                                  | No. | 1 | Operator awareness & safety                 |
| H.4 | Data logger backup & SD card storage     | Local data logger with SD card backup for offline data retention; insurance against connectivity loss                                                  | No. | 1 | Data resilience                             |

## I. INSTALLATION, LABOUR & COMMISSIONING

|     |                                                          |                                                                                                                                                                                                                                                                                                     |     |   |                                                   |
|-----|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|---------------------------------------------------|
| I.1 | Site survey, shadow analysis & detailed design           | Pre-installation site survey; shadow analysis including the dryer tower and furnace flue; single-line diagram; layout drawings; permit-ready design package. Structural survey and strengthening design are under E.1                                                                               | Lot | 1 | Engineering design preceding procurement          |
| I.2 | Mechanical installation — mounting structure & modules   | Skilled labour for mounting structure assembly, module installation, MC4 string interconnection; certified solar installer team; PPE-compliant                                                                                                                                                      | Lot | 1 | Estimated 6–8 days on-site                        |
| I.3 | Electrical installation — DC/AC wiring & terminations    | Skilled electrical labour for DC stringing, combiner-box wiring, inverter installation, ACDB wiring, earthing system installation, terminations; site-distribution feeder laying with duct/trench reinstatement, sub-DB and final-circuit installation at the container/office and ancillary spaces | Lot | 1 | Licensed electrical contractor                    |
| I.4 | Battery bank installation & commissioning                | Battery rack assembly, battery placement, interconnection, initial charging cycle, electrolyte top-up, capacity test                                                                                                                                                                                | Lot | 1 | Specialist battery technician                     |
| I.5 | System testing, commissioning & performance verification | Insulation resistance testing (IR), earth resistance testing, polarity check, string current/voltage measurement, inverter commissioning per manufacturer protocol, 72-hour performance verification, commissioning report                                                                          | Lot | 1 | Per IEC 62446-1 commissioning standard            |
| I.6 | Operator training — warehouse & maintenance staff        | Two-day operator training: routine visual inspection, monitoring dashboard usage, fault recognition, basic troubleshooting, safety protocols, monthly cleaning routine; training manual provided                                                                                                    | Lot | 1 | Capacity-building per CRPGAIN sustainability lens |
| I.7 | Logistics — equipment delivery to Taunggyi site          | Inland freight from Yangon supplier warehouse to Aye Thar Yar Industrial Zone, Taunggyi; handling, loading/unloading, on-site placement                                                                                                                                                             | Lot | 1 | Approx. 620–650 km inland transport               |
| I.8 | Site supervision & project management                    | On-site engineer supervision throughout installation; daily QA/QC; coordination with NCRA project team; punch list management; final handover                                                                                                                                                       | Lot | 1 | Quality assurance                                 |

## J. DOCUMENTATION, PERMITS & WARRANTIES

|     |                                              |                                                                                                                                |     |   |                      |
|-----|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|---|----------------------|
| J.1 | Permit application & local authority liaison | Application and liaison with local electrical authority for grid-tie permit; documentation submission; inspection coordination | Lot | 1 | Statutory compliance |
|-----|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|---|----------------------|

|     |                                                       |                                                                                                                                                                                                  |      |   |                                      |
|-----|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|--------------------------------------|
| J.2 | As-built drawings & technical documentation           | As-built single-line diagram, layout drawings, equipment data sheets, warranty certificates, test reports, O&M manual, structural adequacy certificate (E.9); soft + hard copy submitted to NCRA | Lot  | 1 | Asset register documentation         |
| J.3 | Equipment warranty registration & handover            | Manufacturer warranty registration for all components; warranty documents collated and handed over to NCRA Procurement                                                                           | Lot  | 1 | Required for warranty claim validity |
| J.4 | Insurance — equipment in transit + 1st year operation | Marine/inland transit insurance during delivery; 12-month operational insurance covering fire, theft, lightning damage to solar assets                                                           | Year | 1 | Asset protection                     |

| K. YEAR-1 OPERATIONS & MAINTENANCE |                                                 |                                                                                                                                                                                                  |       |   |                                   |
|------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---|-----------------------------------|
| K.1                                | Quarterly preventive maintenance visits         | Four (4) on-site preventive maintenance visits over 12 months: module cleaning, electrical termination check, inverter diagnostics, battery health check, performance review, maintenance report | visit | 4 | Performance assurance             |
| K.2                                | 24x7 remote monitoring & first-response support | Remote monitoring service, fault alert response, telephonic troubleshooting support; 12-month coverage                                                                                           | Year  | 1 | Minimises downtime                |
| K.3                                | Spare parts kit — Year 1 critical spares        | Spare MC4 connectors (10 pairs), DC fuses (20 nos), inverter cooling fan, battery topping water (10L), miscellaneous fasteners and seals                                                         | Set   | 1 | First-response field repair stock |
| K.4                                | Warranty service mobilisation buffer            | Pre-funded mobilisation cost for warranty-claim site visits during Year 1; ensures rapid technician deployment without procurement delay                                                         | Lot   | 1 | Reduces downtime risk             |

## Documentation and Delivery Requirements

The supplier shall provide all documentation necessary for the lawful supply, installation where applicable, operation, maintenance and warranty of the solar panels, including, as applicable:

- Manufacturer's technical specifications and product data sheets.
- Manufacturer, make, model and country of manufacture.
- Product warranty documentation.
- Installation, operation and maintenance manuals, where applicable.
- Recommended maintenance schedule and maintenance intervals.
- Information on spare parts and replacement components where applicable.
- Relevant product quality, conformity, safety or certification documents.
- Delivery note, packing list and invoice.
- Any other certificates or documents required under applicable Myanmar laws or the contract.

The proposed solar panels shall be new and unused. Used, refurbished or demonstration equipment shall not be proposed unless explicitly permitted by NCRA/MALSE in writing.

The solar panels shall be delivered to the MALSE/CRPGAIN operating hub at Aye Thar Yar Industrial Zone, Shan State, unless otherwise specified in the contract.

Where installation and commissioning are included in the contract, the supplier shall complete installation, testing, commissioning and handover at the site.

# Supplier Eligibility and Compliance Requirements

Bidders must meet certain minimum qualifications to be considered for this procurement. Interested solar equipment suppliers, manufacturers, dealers, distributors, installers and authorised representatives should ensure they satisfy the following eligibility criteria and provide evidence in their proposal.

## Legal Registration

The bidder must be a registered business entity in Myanmar (or in their respective country with legal authority to supply and deliver solar equipment in Myanmar). Include a copy of a valid company registration certificate, relevant business/trading licenses, solar equipment dealership or distribution authorization where applicable, and any relevant registrations with government bodies.

## Experience

Demonstrable experience in the supply of solar panels, solar energy equipment, renewable-energy systems, electrical equipment, or similar equipment.

Provide a list of relevant supplies, including descriptions, equipment types/models, contract values where permissible, delivery/installation dates, client references, and contact information for references where available.

Authorised dealership, distributor or installer status for the proposed manufacturer will be a strong advantage.

## Technical Capability

The bidder must have the necessary technical capability to supply, inspect, deliver, install where applicable, test, commission and provide after-sales support for the proposed solar panels.

The bidder should identify:

- The proposed solar panel manufacturer, make and model.
- Technical personnel responsible for delivery and installation/commissioning, where applicable.
- Availability of qualified solar/electrical technicians.
- Location and capacity of the nearest authorised service centre, workshop or technical support facility.
- Availability of spare parts and expected lead times where applicable.
- Proposed maintenance and after-sales support arrangements.
- Any training or orientation that will be provided to MALSE/NCRA personnel.

## Financial Capacity

Bidders should demonstrate financial stability and capacity to procure, import if applicable, deliver, install where applicable, and provide after-sales support for the solar panels.

This can be shown by providing copies of recent financial statements (balance sheet, income statement) or a letter from a bank confirming the bidder's solvency/credit line.

As a guideline, the bidder's annual turnover should be at least equal to the anticipated contract value. Additionally, the bidder must not currently be bankrupt or the subject of legal proceedings that could jeopardize contract performance.

## Compliance and Integrity

The bidder must not be debarred or blacklisted by any government, donor, or UN agency. A self-declaration letter attesting that the company has no pending legal disputes or past contract terminations for cause should be provided.

The bidder should also demonstrate familiarity with, and commitment to adhere to, applicable Myanmar laws and standards relating to electrical equipment, solar-energy installations where applicable, taxation, labour, occupational health and safety, and commercial operations.

## Joint Ventures/Subcontracting

Joint venture bids or use of subcontractors are allowed only if clearly stated.

In case of a JV, all members must meet the applicable legal requirements and collectively meet the experience criteria, with the lead partner meeting at least 60% of the criteria individually.

Subcontracting of specialised services, such as installation, electrical works, testing, commissioning or specialised servicing, is permissible where clearly identified. The main supplier shall retain full responsibility for all deliverables under the contract.

All subcontractors or third-party service providers must be identified and their qualifications provided in the bid.

## Local Presence

Preference may be given to bidders who have an operational presence in Shan State or neighboring regions, as this can facilitate faster delivery, servicing, repair and access to spare parts.

If the bidder is not locally based, they should outline their plan for providing timely after-sales service and technical support in Shan State, including arrangements for servicing, breakdown response, spare parts and repairs.

Bidders that do not clearly meet the above criteria may be disqualified during preliminary examination. NCRA reserves the right to ask for clarifications or additional proof of qualifications during evaluation.

## Proposal Submission Requirements

Interested and eligible bidders are invited to prepare a written proposal in English, comprising two parts: a Technical Proposal and a Financial Proposal.

The proposal must be submitted in sealed envelopes (or via authorized electronic means, as specified in the invitation) no later than the deadline indicated in the tender advertisement. Late submissions will not be considered.

The contents of each part should include:

### 6.1. Technical Proposal

The technical proposal should address all aspects of the ToR (excluding any price/cost information). It must be structured and presented with sufficient detail and clarity to allow the evaluation committee to assess the bidder's understanding, proposed solar equipment, delivery arrangements, installation/commissioning approach where applicable, warranty and after-sales capability.

The technical proposal should contain:

## **Executive Summary**

A brief overview of the supplier's understanding of the procurement requirement and key highlights of the proposed solar panels, including make, model, delivery arrangements, installation/commissioning arrangements where applicable, warranty and after-sales support (max 1–2 pages).

## **Approach and Methodology**

Describe the approach the bidder will use to supply, prepare, deliver, install where applicable, inspect, test, commission and hand over the solar panels.

This should include:

## **Delivery Plan and Schedule**

A detailed delivery schedule indicating major activities, milestones and deliverables.

- Expected delivery lead time from contract signing.
- Equipment sourcing arrangements.
- Any importation or customs requirements.
- Installation preparation and site coordination arrangements, if applicable.
- Inspection and quality-control arrangements before delivery.
- Delivery arrangements to Aye Thar Yar Industrial Zone.
- Installation, testing and commissioning arrangements, where included.
- Handover process and documentation.

## **Technical Solution**

Explain how the proposed solar panels meet the technical requirements of this ToR. The bidder should provide the manufacturer's technical specifications, product data sheets, dimensions, performance information, warranty information, installation requirements and other relevant technical information.

Any factory-standard or optional features included in the proposed equipment should be clearly identified.

The bidder shall clearly identify any assumptions, exclusions or deviations from the technical requirements.

## **Resource and Support Plan**

Provide a description of the supplier's technical and service support arrangements. This should include:

- Organisation responsible for delivery and installation, where applicable.
- Technical/service personnel.
- Proposed user orientation or training, where applicable.
- Maintenance support arrangements.
- Availability of spare parts and replacement components.
- Workshop/service centre arrangements.
- Breakdown and emergency support, where applicable.
- Estimated response times for service requests.

## Quality Assurance and Safety

Explain the quality-control measures that will be applied before delivery and, where applicable, during installation and commissioning.

- Pre-delivery inspection procedures.
- Verification of product specifications.
- Inspection of equipment and accessories.
- Electrical and installation safety checks, where applicable.
- Testing and commissioning procedures, where applicable.
- Handover documentation.
- Any applicable manufacturer quality standards or ISO certifications.

## Company Profile and Experience

A brief introduction to the supplier, including years in business, areas of expertise, organizational capacity, dealership/distribution/installation status, and service network.

Highlight previous supplies or installations that are similar to this procurement and provide client references where available.

## Proposed Solar Panels

List the exact manufacturer, make, model, year of manufacture, country of manufacture, and other key product information. The bidder should clearly identify whether the proposed equipment is brand new, demonstration/showroom equipment, refurbished equipment or used equipment.

If used or demonstration equipment is proposed, full supporting documentation must be provided and such equipment will only be considered if expressly permitted by NCRA/MALSE.

## Technical Compliance

A section explicitly confirming compliance with the technical specifications and standards.

The bidder should provide commentary on each major requirement from the Technical Specifications section of this ToR, stating how the proposed solar panels meet or exceed it.

If there are any deviations or alternative solutions proposed, they must be clearly identified here with justification.

## Annexes to Technical Proposal

- Copy of company registration, licenses and certificates (as per eligibility).
- Manufacturer or authorised dealer/distributor/installer certificate, where applicable.
- Manufacturer's technical specification sheets and product data sheets.
- Product brochures and photographs.
- Detailed equipment and installation information, where applicable.
- Warranty documentation.
- Service and maintenance plan.
- Spare-parts availability information.
- Previous client references or completion/supply certificates.
- Audited financial statements or bank letters.
- Proposed delivery and implementation schedule.
- Any inspection, testing or commissioning checklist, where applicable.

- Any other documents relevant to demonstrating compliance.

The Technical Proposal should not include any pricing information. It should be concise yet comprehensive. Excessively long submissions without substance should be avoided; focus on the requirements of this specific procurement.

## **6.2. Financial Proposal**

The financial proposal should detail all costs associated with the procurement, delivery and handover of the solar panels and, where included in the supplier's scope, installation, testing and commissioning. It must be submitted separately from the technical content (e.g., in a separate sealed envelope or file) to ensure unbiased evaluation.

### **Bid Form and Price Summary**

A cover page or letter stating the total firm-fixed price for the complete supply and delivery of the solar panels, and any installation/commissioning services included in the scope, in the currency specified in the tender.

This should be signed by the authorized representative of the company.

The quoted price is assumed to be inclusive of all applicable taxes, duties, charges, transportation, delivery, preparation, documentation, installation where applicable, supplier overheads and profit unless explicitly stated otherwise.

If taxes, duties or other charges are not included, this must be clearly indicated with the applicable percentage or amount.

### **Detailed Cost Breakdown**

A detailed cost schedule breaking down the total price into major components, such as:

- Solar panels.
- Associated equipment and accessories required under the approved technical solution.
- Mounting or installation materials, where applicable.
- Installation, testing and commissioning, where included.
- Transportation and delivery to Aye Thar Yar Industrial Zone.
- Site preparation or other works, where included.
- Safety equipment and installation materials, where applicable.
- Warranty and after-sales support, where separately priced.
- Recommended spare parts or maintenance package.
- Taxes, duties and applicable government charges.
- Any optional features or additional items.

Any optional items should be clearly separated from the mandatory offer and should not be included in the evaluated base price unless otherwise specified.

This breakdown will be used to evaluate the reasonableness and completeness of the quoted cost. The contract may be awarded on a firm-fixed-price basis.

### **Payment Terms**

The proposal can suggest a payment schedule aligned with procurement and delivery milestones, for instance:

- 50% advance upon contract signing against bank guarantee, if applicable.
- 25% upon confirmation that the solar panels and associated equipment are ready for delivery or pre-delivery inspection.
- 25% upon successful delivery, installation/testing where applicable, inspection, documentation and acceptance.

Any assumptions in the bid should be clearly stated.

## Validity

A statement that the financial offer is valid for a minimum of X days (typically 60 or 90 days) from the bid submission deadline, to allow sufficient time for evaluation and contracting.

## Currency and Taxes

State the currency used and the inclusion/exclusion of taxes, duties, transportation costs and any other applicable fees.

The supplier is responsible for any withholding or income taxes on their earnings as per Myanmar law.

If priced in foreign currency, clarify any exchange-rate assumptions.

No additional technical details should appear in the financial proposal. Bidders are reminded that all costs necessary to fulfill the obligations of the contract, as understood from the ToR, should be included in their financial offer.

Unrealistically low or high bids will be scrutinized and may lead to disqualification if the bidder is deemed non-responsive or lacking understanding.

Best value (quality-cost based) selection will be employed.

## Submission Instructions

- Bids must be submitted by the date and time specified in the official invitation or advertisement. The submission address (physical or electronic) and required format (number of hard copies, or email attachments, etc.) will be as per the tender announcement. Bidders should carefully follow those instructions.
- If submitting physically, the Technical and Financial proposals should be in separate sealed envelopes, clearly labeled “TECHNICAL PROPOSAL – [Bidder Name]” and “FINANCIAL PROPOSAL – [Bidder Name]” respectively, and then enclosed in a single outer envelope/package marked with the tender reference and project name. The outer envelope should have no indication of the bid price.
- If submitting electronically, usually two separate PDF files (one technical, one financial) should be sent, or uploaded via a portal, as instructed. Ensure the financial file is password-protected if required, to be opened only after technical evaluation. Bid to be submitted at: [information@ncramyanmar.com](mailto:information@ncramyanmar.com)
- Bidders may submit questions or requests for clarification in writing up to a certain date (usually a week before the deadline). All queries should be directed to the contact person/email indicated. Responses to any queries or amendments to the ToR (if needed) will be circulated to all prospective bidders or posted publicly.
- It is advised that bidders acknowledge receipt of this ToR and indicate their intention to bid, so that any addenda can be communicated.

- A pre-bid meeting or clarification session may be scheduled if required to allow bidders to seek clarification on the solar panel requirements, operational requirements, delivery location, installation arrangements or other procurement conditions.

By submitting a proposal, bidders agree to be bound by the terms and conditions outlined in this ToR, unless otherwise clearly stated as an exception in their proposal.

New CrossRoad Asia (NCRA) reserves the right to accept or reject any proposal, and to annul the bidding process at any time prior to award, without thereby incurring any liability.

## 1. Evaluation Criteria

The evaluation of bids will be carried out by a Tender Evaluation Committee using a two-stage process – first the Technical Proposal will be evaluated against the technical criteria, and only proposals that meet the minimum technical score (or are ranked highest technically) will have their Financial Proposals opened for financial evaluation.

The contract will be awarded to the bidder offering the best value for money, balancing both technical quality and cost.

The following criteria and weights (tentatively) will be used:

### 1.1. Technical Evaluation (70 points) – Detailed Scoring Breakdown

#### Experience and Past Performance (15 points, minimum 10 points mandatory to pass selection)

Assessed based on relevant experience supplying and/or installing solar panels, solar energy equipment, renewable-energy systems or comparable equipment.

- Successful completion of similar solar equipment supply or installation contracts. 5 points (mandatory)
- Experience in Myanmar/Shan State. 2 points
- Manufacturer or authorised dealer/distributor/installer status. 5 points (mandatory)
- Quality of client references and feedback. 2 points
- Experience supporting equipment in rural, remote, or challenging operating environments. 1 point

#### Delivery and Implementation Plan (20 points, 5 points mandatory to pass selection)

Quality and feasibility of the proposed procurement, delivery, installation where applicable, testing and handover methodology.

The evaluation will consider whether the delivery plan is logical, realistic and demonstrates the bidder's ability to provide the solar panels within the required timeframe.

- Equipment availability, 5 points.
- Delivery lead time within 15 days from signing contract and providing first payment, 5 points.
- Importation/customs arrangements, if applicable, 1 point.
- Installation/site preparation arrangements, if applicable, 1 point.
- Registration/documentation or certification arrangements, where applicable, 1 point.

- Delivery to Aye Thar Yar Industrial Zone, 5 points (mandatory).
- Testing, commissioning and handover, 2 points.
- Ability to respond to delays or supply-chain constraints, 1 point.

## **Technical Solution and Compliance (15 points, 7 points mandatory to pass selection)**

The degree to which the proposed solar panels and associated solution meet the technical requirements. Detailed technical scoring shall be applied against the technical specifications completed by NCRA/MALSE.

- Compliance with required solar panel specifications and performance requirements.
- Compatibility with the intended site/application, where specified.
- Quality and conformity of proposed equipment.
- Installation and commissioning approach, where applicable.
- Safety and protection measures, where applicable.
- Warranty and service provisions.
- Clarity and completeness of technical compliance documentation.

## **After-Sales Service and Support (10 points)**

Qualifications and capacity of the supplier's service and support arrangements.

- Spare-parts/replacement component availability. 5 points
- Qualified technical support and contacts provided. 2 points
- Warranty support provided as per specifications in contract. 3 points
- Preventive maintenance plan and user training, where applicable.

## **Quality Assurance, Warranty and Safety (10 points)**

Adequacy of the supplier's quality assurance and solar equipment safety measures.

- Pre-delivery inspection and equipment testing successfully completed, 3 points.
- Warranty provided, 2 points.
- Quality assurance and safety procedures, 5 points.

Total Technical Points: 70 with 22 points mandatory to meet to pass selection.

## **1.2. Financial Proposal and Final Selection**

Technical proposals are evaluated independently from financial proposals.

After obtaining a ranking of the top five technical proposals, NCRA will associate the financial proposals to each technical proposal in an open bidding process with the Evaluation Panel.

Financial proposals exceeding the bid budget of 5% and above will not be considered.

Financial proposals meeting the bid budget within a 5% range (above or below) will be considered and associated with the technical evaluation independently conducted.

Financial proposals meeting the technical evaluation and with a financial offer 5% or more below the bid budget will receive an additional 1 point for each -5% interval up to a maximum of three extra points.

NCRA will review and update the Final Selection list and a notification of award will be issued to the successful bidder, and unsuccessful bidders will be notified of the outcome after award.

## 1.3. Compliance and Standards

As part of technical evaluation, compliance with the solar panel specifications, applicable electrical and safety requirements, manufacturer's standards, and relevant Myanmar regulations will be a crucial factor.

Any bid that fails to adhere to essential safety, performance, quality, or legal operating requirements may be disqualified regardless of price.

Bidders are expected to explicitly confirm in their technical proposal that all mandatory standards and requirements will be met or exceeded.

Furthermore, the evaluation will also consider the bidder's compliance with tender instructions, including proper submission and completeness of documents.

Non-compliance with submission requirements or attempts to influence the evaluation could lead to rejection of the bid.

## 2. Terms and Conditions

### Contract Type

The result of this procurement will be a firm-fixed-price supply contract for the entire scope of supply and delivery and, where included, installation and commissioning.

The supplier will be obligated to provide the agreed solar panels and all included accessories, documentation, delivery, inspection, testing, installation/commissioning where applicable, and handover requirements within the agreed price.

Any variations or changes will require prior approval through a formal change order process.

### Supplier's Responsibilities

The selected supplier shall be fully responsible for sourcing and supplying the solar panels in accordance with the approved specifications.

The supplier shall also be responsible, as applicable, for:

- Pre-delivery inspection.
- Equipment preparation and packaging.
- Delivery and transportation.
- Installation and electrical works where included in the contract.
- Required documentation.
- Testing and commissioning where included.
- Handover.
- Warranty obligations.
- After-sales technical support.

The supplier is considered the prime executor of the supply contract and shall not assign the contract in whole to another party.

## Warranty

The solar panels shall carry a manufacturer's warranty of not less than 24 months or the manufacturer's standard warranty from the date of final acceptance, whichever is more favorable to NCRA/MALSE.

During the warranty period, the supplier must promptly repair or replace, at no additional cost, defects attributable to manufacturing, materials, workmanship or components covered by the warranty.

The supplier shall clearly state the warranty period, performance/product warranty terms where applicable, warranty exclusions and the process for submitting warranty claims.

Specific components included in the supplier's scope shall be covered by the applicable manufacturer's warranties.

## Insurance

The supplier shall be responsible for adequate insurance coverage during transportation and delivery of the solar panels. Where applicable, this shall include insurance covering:

- ☐ Loss or damage to the equipment during transportation.
- ☐ Third-party liability during delivery.
- ☐ Damage or loss arising from loading, unloading and transportation.

## Force Majeure

The contract will include a force majeure clause excusing delays or non-performance caused by events beyond the supplier's control (e.g. natural disasters, new conflicts, major transport disruptions, government restrictions, or other exceptional events), provided timely notice is given.

Routine supply-chain delays, ordinary transportation difficulties or foreseeable commercial risks should be appropriately considered by bidders in their delivery schedules.

## Payment Terms

Payments will be made according to the agreed schedule.

A portion of the payment may be retained until final delivery, inspection, acceptance and completion of all handover documentation and, where applicable, successful installation and commissioning.

## Liquidated Damages

In case the supplier fails to deliver the solar panels within the agreed delivery period, without approved extensions, liquidated damages may be imposed at a predetermined rate of 0.5% of the contract value per week of delay, up to a maximum of 10%.

The liquidated damages clause will be detailed in the contract.

## Governing Law

The contract will be governed by the laws of the Republic of the Union of Myanmar.

Any disputes arising will be resolved through negotiations, and if that fails, through arbitration or legal means as per the contract's dispute resolution clause.

## Ethical Conduct

The bidder shall ensure no corrupt, fraudulent, collusive or coercive practices in connection with this bid.

NCRA reserves the right to disqualify any bid or terminate the contract if such practices are detected.

Bidders are required to sign a Code of Ethics or Anti-bribery statement as part of the submission, if provided.

By participating in this tender, bidders acknowledge that they have read and understood all sections of this ToR, including the technical requirements and any annexes, and agree to abide by the terms stated.

The content of the bidder's proposal may become part of the contractual obligations if the bid is accepted, so it should be truthful and exact.

## Proposal Submission Requirements

Interested bidders must submit technical and financial proposals separately at NCRA email and/or office via envelope, within the 28th of October 2026 at 13:00 GMT +6.30 (Yangon time).

For offers submitted via email:

- Send technical offer to [information@ncramyanmar.com](mailto:information@ncramyanmar.com) with subject "Procurement of Solar Panels for MALSE Warehouse and Offices – CRPGAIN Project Technical Offer"
- Send financial offer to [information@ncramyanmar.com](mailto:information@ncramyanmar.com) with subject "Procurement of Solar Panels for MALSE Warehouse and Offices – CRPGAIN Project Financial Offer"

For offers submitted via envelope at the following address:

- 2-C That, Tha Nar Yeik Thar Street, Middle Shwe Gone Taking Ward, Bahan Township, Yangon, 11201
- One envelope bearing the subject "Procurement of Solar Panels for MALSE Warehouse and Offices – CRPGAIN Project Technical Offer"
- One envelope bearing the subject "Procurement of Solar Panels for MALSE Warehouse and Offices – CRPGAIN Project Financial Offer"

## Contact Information

For further inquiries, bidders may contact:

- Contact Person's Name: Vijay Dhayal
- Organization Name: New Crossroads Asia Myanmar Ltd
- Address: 82-C, Thar Tha Nar Yeik Thar Street, Middle Shwe Gone Taing Ward, Bahan Township, Yangon
- Email: [vijaydhayal@ncramyanmar.com](mailto:vijaydhayal@ncramyanmar.com)
- Phone Number: +95 9255 90 1514