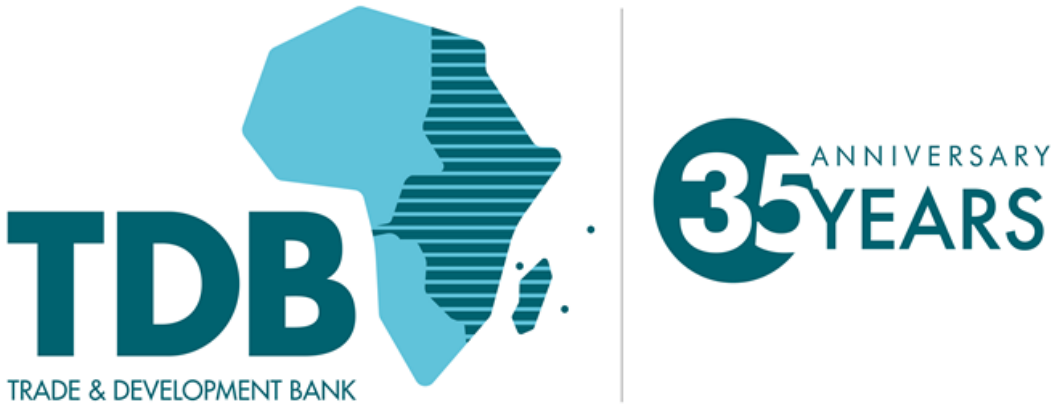


E&S RISK MANAGEMENT PROCEDURE FOR OFF-GRID SOLAR ENERGY PROJECTS

June 2020

ADDENDUM TO THE ESMS
Debt financing to off-grid solar small & medium (SME) sized energy companies[1]

1. INTRODUCTION

This addendum is prepared by TDB for its debt financing to off-grid solar. All staff involved in debt financing to off-grid solar companies should apply this guideline to assess the potential E&S risks and impacts associated with providing debt financing.
This addendum highlights the E&S risks and impacts specific to off grid solar projects.

2. SCOPE AND APPLICABILITY

This guideline applies only to debt financing for off-grid solar energy projects. These include solar lanterns, solar home systems (SHS) and standalone solar systems for irrigation, poultry, vending, solar powered sewing machines and other uses. The typical clients for debt financing to off-grid solar could include: (i) solar

[1] This document draws from ECREEE's ESRM Sector Guide on Off Grid Standalone Solar for Financial Service Providers

equipment distributors supplying products to households and commercial establishments; (ii) energy service companies providing service of electrification to public & private institutions and other clients; and (iii) manufacturers of off-grid solar products.

3. USE OF THIS ADDENDUM

This addendum must be read and used in conjunction with the main environment & social management system (ESMS) of TDB.

The addendum does not duplicate or add to the processes already defined in the main ESMS. It only highlights the key issues relevant to off-grid solar projects such as project categorization, E&S issues to focus on during due diligence, and specific tools for off grid solar projects. Where needed, reference is made to the main ESMS with relevant sections highlighted.

All requirements of reporting to TBD's lenders, TDB's own E&S capacity and TDB's external communication will remain driven by the main ESMS. These issues are not covered here in this addendum.

4. KEY E&S RISKS AND IMPACTS IN OFF GRID SOLAR

Off grid solar products include:

(i) solar lanterns: solar lanterns are usually of less than 10W in capacity and come with a solar panel to provide light along with mobile phone charging facility.

(ii) solar home systems (SHS): solar home systems used by households in general range in capacity from 30W to 80W. Smaller solar home systems use a mobile solar panel to charge a battery. Larger solar home systems can have the solar panel installed in the household roof or mounted on a pole near the house.

(iii) Standalone solar systems: Standalone solar systems that are used for shops and marketplaces are similar to the ones used for households. With innovation in technology, standalone solar systems can be used to electrify small and medium enterprises (SMEs) such as solar powered egg incubation

for poultry farms, solar milk chillers for dairy farms, solar powered sewing machines, solar irrigation, etc. These systems are of 1kW to 10 kW of capacity range. Such systems will either install the solar panels on the roof of the SME building or on the ground adjacent to the SME building depending on convenience.

The key E&S risks associated with these off grid solar technologies are discussed in the following sections.

(a) **Electronic waste (e-waste) – chemical pollution**

Main E&S risks and impacts occur at the end of the life cycle of the off-grid products and materials. These are in relation with the production of e-waste which contains hazardous materials. The risk results from the disposal and recycling of solar panels, used SHS units, and especially lead acid and lithium ion batteries, which are considered hazardous waste, the plastic materials used in equipment, some residues from polystyrene, steel, and metal elements such as aluminum, copper or cadmium.

If not properly handled, the production of e-waste could potentially lead to soil and freshwater contamination, visual impact, local area degradation, health risk for workers of informal recycling sector and communities within the vicinity of such waste. Potential impact on air quality in areas close to informal recycling activities cannot be ruled out. Additionally, if the products are not disposed of well then, they might find their way back into the informal and illegal market of used products. Such used products create reputational risk for their manufacturers.

(b) over-exploitation of water resources

One of the possible uses of off grid solar technology is for irrigation purposes. In the case of irrigation, the common argument is that solar irrigation systems lead to free pumping and hence an overexploitation of groundwater reserves is very likely[2].

(c) Occupational Health and Safety (OHS)

The potential for occupational injuries and accidents exists in all stages of the life cycle of off-grid solar materials- from manufacturing, installation and maintenance to decommissioning and recycling. For instance, off-grid systems are installed on building tops which requires workers to work at height which exposes them to the risk of fall.

[2] ENERGYPEDIA – Do Solar Powered irrigation Systems (SPIS) contribute to the overexploitation of ground water reserves?

The OHS risk is further enhanced as most companies working on off grid solar projects are small and medium enterprises (SMEs). While SMEs are less complex than large corporates, they do have their unique E&S challenges as a result of their size, capacity and resources. These challenges relate to poor oversight of E&S, poor working conditions and sub optimal human resource policies and poor OHS management. **Annex 2** provides examples of OHS risks.

(d) Land-related risks

Land-related issues are not expected to be significant. Most off grid solar systems are installed on public or private buildings with a small proportion on land. Usually, the consent of only the building owner or landowner is required for installation.

(e) Gender and vulnerable groups risks

Some gender-related risks might relate to risk of underserving/ excluding female-headed households, gender-based violence and the need to close gender gaps in income generating opportunities. Gender neutral access to credit and health care services and their outcomes are also relevant risks to monitor in project countries.

(f) End users' health and safety

These risks are in relation with the safety of installing electrical equipment. Effective protection measures of the solar off grid installations will assure the safety of the end users. These include protective measures against electric shocks, overcurrent and decouplings.

Annex 3 presents the potential E&S risks and impacts and possible mitigation measures. **Annex 9** provides additional guidelines on mitigation strategies.

5. KEY APPLICABLE E&S REQUIREMENTS FOR OFF GRID SOLAR

Considering the risks involved and the nature of companies to be financed by TDB for off grid solar, the applicable E&S requirements are determined to include:

a. E&S exclusion list; and
b. National E&S regulatory requirements.

In addition to the above compliance requirements, all companies being financed by TDB are required to have the following:

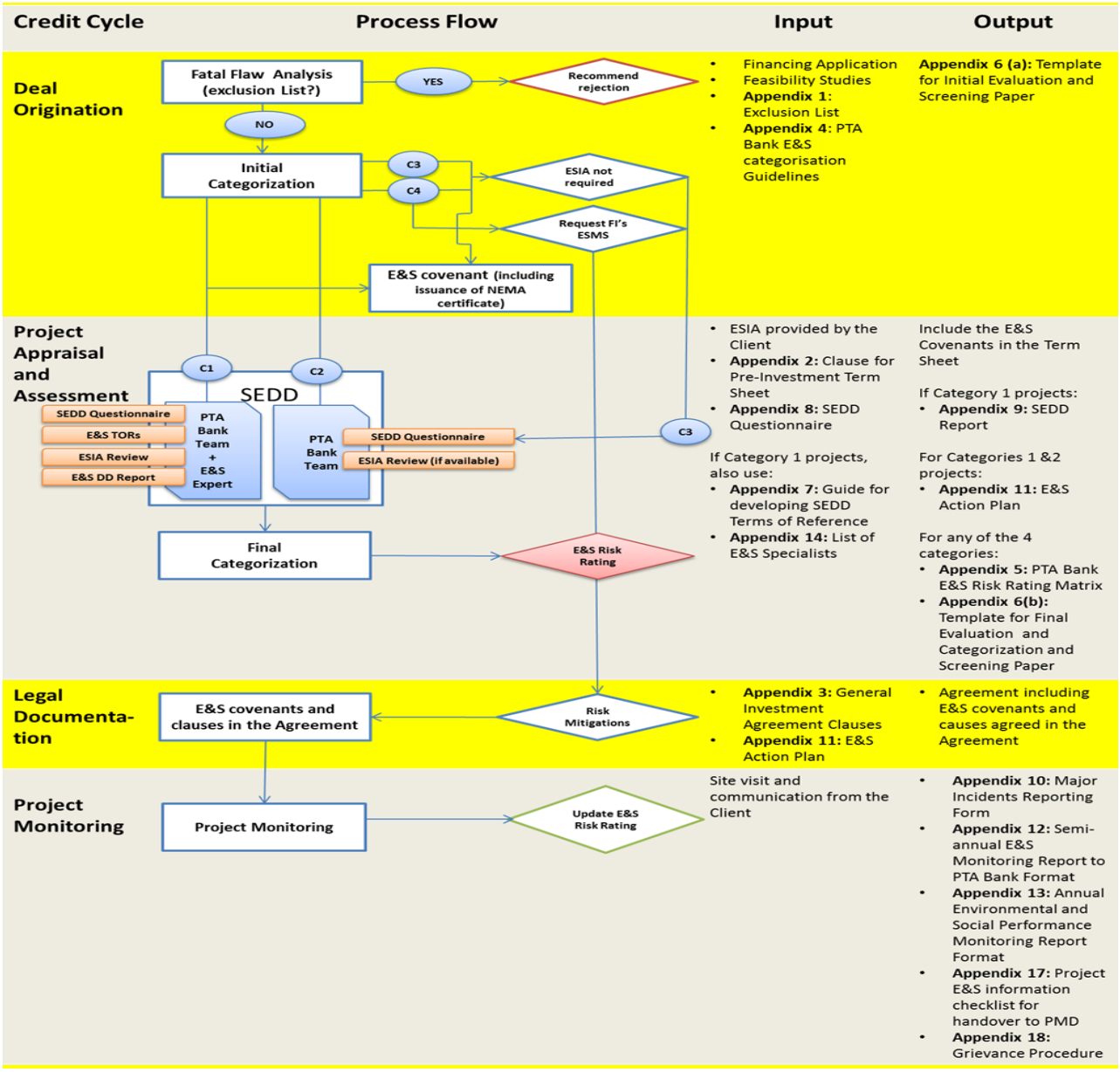
1. Formal E&S Policy and procedures documented as an ESMS
2. Policy, procedure and records on occupational health and safety
3. Human Resource policy (including code of conduct for workers and grievance mechanism for workers)
4. Waste management policy and procedures
5. Stakeholder engagement plan and grievance mechanism

6. E&S RISK MANAGEMENT PROCESS

TDB has adopted an E&S policy (section 3.1.3 of ESMS) that defines its commitment to managing E&S risks in its operations. To this effect, TDB implements an ESMS for identification, assessment, management and on-going monitoring of identified E&S risks associated with its financing operations. Section 4 of the ESMS defines the process to be followed for E&S risk management. The key steps in the process include:

- Step 1: Identifying fatal flaws and initial E&S categorization at deal origination stage;
- Step 2: Environment & social due diligence (ESDD) & final categorization at project appraisal and assessment stage
- Step 3: Legal documentation; and
- Step 4: Project monitoring.

The process flow diagram for implementation of TDB's ESMS is presented in the diagram below.



6.1 E&S SCREENING

This refers to step 1 of the ESMS process and has to be completed as soon as the deal has been originated and initially assessed. In this step, the focus is on identifying any major no-go's/ fatal flaws in the proposed project. In the event of any no-go, the project may be dropped from further screening. If no fatal flaws are identified, an initial E&S categorization may be assigned to the project. **Annex 4** provides the Initial E&S screening tool.

6.1.1 Risk categorization of off grid solar

Off grid solar projects inherently carry less E&S risks. Most risks (highlighted in the section above) are limited and are mostly site-specific, largely reversible, and readily addressed through mitigation measures. As a result, most off grid solar projects will be categorized as category 2. TDB will use category 2-A (low risk) and category 2-B (medium/ high risk) categories for off grid solar projects. These are explained in the table below.

Table 1. E&S risk categorization when assessing solar off-grid businesses

Risk categorization	Description/Criteria
Category 2-A (low risk)	Businesses with minimal or no adverse E&S impact will be required to have in place only minimum ESMS core components to address key risks and mitigation measures as stated in section 3.3 (b)
Category 2-B (medium/ high risk)	Businesses that require – in addition to the above – an ESAP with specific measures and/or E&S covenants in legal/ loan agreements, as well as close monitoring, due to the severity of their potential adverse E&S impacts as a result of the size and/or characteristics of the solar business, and/or identified situations, such as occupational accidents or labor incidents that have not been adequately addressed, fair working conditions and terms of employment, or installers without applying safe installation measures

Annex 3 provides the E&S categorization memorandum template.

6.2 E&S Due Diligence

Step 2 refers to E&S due diligence of the project. E&S due diligence involves identification and assessment of E&S risks & impacts and to review the mitigation and management plans proposed by the project with a view to determine their effectiveness in achieving the outcomes compliant with the applicable E&S requirements.

As part of this step, the ESMS officer or any other staff tasked with the responsibility of ESDD should undertake the following steps:

i. Review the initial E&S screening form
ii. Review the E&S information provided by the company such as E&S policy, HR policy, E&S assessments, regulatory compliances, E&S monitoring reports, etc.
iii. Undertake site visit to review the E&S conditions

Annex 5 provides a tool for undertaking E&S due diligence. At the end of E&S due diligence, the E&S category should be confirmed and an E&S Action Plan (ESAP) should be drawn up with clear timeline and deliverable. A format of ESDD report is provided in **Annex 6** and the ESAP format is provided in **Annex 7**.

6.3 Legal Documentation

Following the ESDD, the ESMS officer should recommend the conditions and covenants for inclusion in the transaction documentation to ensure that identified E&S risks are adequately managed. Sample clauses are provided in **Appendix 2 & 3 of TDB's ESMS**. In addition to the ones mentioned in the TDB ESMS, the following should be included for off grid solar projects:

- The client will ensure that it will not dump E-waste in public places and will follow international best practices for disposal of E-waste

6.4 Monitoring and Supervision

TDB will monitor the E&S performance of all its off grid solar projects. The monitoring will focus on: (i) implementation of the ESAP; (ii) compliance with E&S requirements including E&S covenants in legal documentation; and (iii) E&S performance in terms of OHS incidents, waste management, HR policies, grievance mechanism. To this effect, the client will provide an incident report (in case of an incident as defined in TDB's ESMS (**section 5.1.1**) and annual E&S

monitoring report (**Annex 8**) along with supporting documentation. TDB might conduct site visits as part of its monitoring & supervision.

Annexes

ANNEX 1

EXCLUSION LIST

TDB will not finance directly or any project, infrastructure or trade finance activity involving:

1. Production or trade in military arms, weapons and ammunitions
2. Production or trade in any product or activity deemed or legislated as in a member state deemed or legislated as illegal (i) in that state, or (ii) under regulations or international conventions and agreements of general application, or subject to international bans, including but not limited to certain pharmaceuticals, pesticides/herbicides, ozone depleting substances and Polychlorinated Biphenyls (PCBs).
3. Areas gazetted by host countries through national or international legislation and deemed to have a high biodiversity and/or cultural value, or any other activities that leads to substantial destruction of the environment.
4. Production or use of or trade in hazardous materials such as radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where TDB considers the radioactive source to be trivial and/or adequately shielded.
5. Production or trade in wildlife or wildlife products regulated under CITES
6. Gambling, casinos and equivalent enterprises.
7. Production or trade in alcoholic beverages (excluding beer and wine)
8. Production or trade in radioactive materials. This does not apply to the purchase of medical equipment, quality control (measurement) equipment and any equipment where IFC considers the radioactive source to be trivial and/or adequately shielded.
9. Production or activities involving harmful or exploitative forms of forced labour/harmful child labour.
10. Production or activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without full documented consent of such peoples
11. Prostitution and/or Pornography
12. Projects involved in the conversion or degradation of Critical Forest Areas
13. Projects Impacting upon World Heritage sites
14. Projects Impacting upon UN listed protected areas and natural parks
15. Unsustainable fishing methods (e.g. Blasting and drift net fishing in marine environment using nets in excess of 2.5 KMs in length)

A reasonableness test will be applied when the activities of the project company would have a significant development impact but circumstances of the country require adjustment to the Exclusion List.

ANNEX 2

EXAMPLES OF OHS KEY AREAS FOR SOLAR OFF GRID BUSINESSES

OHS identified areas for solar off grid[3]	Description
General Facility Design and Operation	*Fire Precautions* Provision of manual firefighting equipment that is easily accessible and simple to use *First Aid* The employer should ensure that qualified first aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.
Communication and Training	*OHS Training* A basic occupational training program and specialty courses should be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments. Training should generally be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards. Training should adequately cover: - Knowledge of materials, equipment, and tools - Known hazards in the operations and how they are controlled - Potential risks to health - Precautions to prevent exposure - Hygiene requirements

[3] Based on IFC, EHS Guidelines, General EHS Guidelines: Occupational Health and Safety

	- Wearing and use of protective equipment and clothing - Appropriate response to operation extremes, incidents and accidents
Physical Hazards	*Welding* Welding creates an extremely bright and intense light that may seriously injure a worker's eyesight. Measures include provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. *Ergonomics, Repetitive Motion, Manual Handling* Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds. *Working at heights* Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters. Fall prevention may include: - Proper use of ladders and scaffolds by trained employees - Use of fall prevention devices - Appropriate training in use, serviceability, and integrity of the necessary PPE - Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall
Personal Protective Equipment (PPE)	Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. - Identification and provision of appropriate PPE that offers adequate protection to the worker - Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for employees - Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

Monitoring	Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program should include: - Safety inspection, testing and calibration - Surveillance of the working environment - Surveillance of workers health - Training *Accidents and Diseases monitoring* The employer should establish procedures and systems for reporting and recording: - Occupational accidents and diseases - Dangerous occurrences and incidents All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety. The investigation should: - Establish what happened - Determine the cause of what happened - Identify measures necessary to prevent a recurrence

Source: ECREEE's ESRM Sector Guide on Off Grid Standalone Solar for Financial Service Providers

ANNEX 3

SUMMARY OF POTENTIAL E&S RISKS AND IMPACTS AND POSSIBLE MITIGATION MEASURES

Type of risk	Description	Mitigation measures
Waste management (electronic waste, chemical pollution)	Used panels, used batteries and units (both lead acid and lithium ion) are hazardous waste[4] Improper recycling of lead acid batteries causes wide-scale lead pollution/poisoning, including air, soil, and water contamination; lead entry into the food chain resulting in diseases and fatalities Management of used batteries will be a significant risk Additional waste issues are related to plastic material, polystyrene residues, aluminum, copper, steel	• Encourage incorporating the cost of the responsible management of waste into the business budgeting and financial prospections. Responsibly choose a waste management partner • Encourage common (regional or country) frameworks for recycling of batteries and need to be promoted • Engagement with industry, regulators, and NGOs to explore practical regional and country waste management solutions • Proper management waste systems and channel • Establishment of a reparation network and replacement parts channel • Communication and educational campaigns for end users and communities • Internal training on waste management processes • Promote reuse, recycling or energy recovery plastic treatment

[4] When recycled:

- Used lead-acid batteries are broken open, acids are drained into the soil and the lead plates are removed
- Some of the lead are recycled (melted into other forms) while others are shipped abroad
- Most lead-acid recycling plants operate under conditions which are hazardous to human health and the environment

If disposed of in landfills or other places:

- Wide-scale lead pollution/poisoning
- Soil and fresh water contamination
- Lead entry into the food chain resulting in diseases and fatalities

		• Reuse, recycling or energy recovery in an equipped unit for polystyrene treatment • Promote recycling • Implementation of voluntary management systems such as ISO 14001[5]
Worker/ occupational health and safety	Slips and trips, falls Manual handling issues Hazards of musculoskeletal disorders Injuries, lack of protective equipment etc.	• Solar equipment needs to be installed safely • Workers shall wear protective gear and be trained in safe practices • Assessment of workplace hazards. Consult and involve workers in the workplace risk assessment as well as in the choice of prevention measures • Internal training on type of risks and suppression measures (safe working procedures) • Supply appropriate Personal Protective Equipment (PPE) and train on its use and ensure that is properly maintained • Maintain a fully stocked and accessible first aid kit
Labor issues	Child or forced labor Improper grievance redress for workers Unfair terms of employment	• No child or forced labor can be employed by companies • Develop and implement a proper grievance redress mechanism • Solar companies to have HR policies that articulate clear and fair terms of employment and provide for no discrimination and equal opportunity • Proper training and record on the system or working procedure • Fair employment practices can lead to better business and better workers

[5] ISO 14000 is a family of standards related to environmental management to help companies, organisations, etc. to minimise how their operations negatively affect the environment. ISO 14001 defines criteria for an Environmental Management System. The company, organisation, etc. sets its own targets and performance measures, and the procedures to meet the goals and monitoring and evaluating the situation.

		• Employing women
Land and related issues (installation)	If the installations need some on-the-ground space (as opposed to rooftops), ensure the areas are suitable for installation Key risks may be related to voluntary land donation in case of public / community buildings	• Photovoltaic installations on the ground must take into account the protection of existing agricultural and forestry areas • Prioritize "degraded sites" (brownfield sites) Avoid areas subject to natural hazards
Consumer / user health hand safety	Safe installation and use of panels and batteries	• Ensure safe installation • Promote consumer education about proper and safe practices for use of equipment • Proper isolation of equipment • Proper signalization of the solar power system • E-waste generation and management raising awareness
Water consumption and resource efficiency	Solar irrigation: Water scarcity; social conflicts between community users	• Measures for resource efficiency • Communication campaigns and raising awareness on sustainable water management (especially for productive end users)
Gender-related risks	Women are disproportionately affected by lack of reliable access to energy Gender-based violence Underserved female-headed households	• Women employment with solar businesses is part of fair labor practices • Gender-sensitive stakeholder engagement • Promote active participation of women entrepreneurs, women's organizations, civil society and non-governmental organizations working on gender and energy issues • Increase information and awareness of women that will allow them to enter into renewable energy market

	Social tension and decrease social cohesion	• Ensure that women entrepreneurs in the energy sector will have equal access to finance • Capacity building and internal training on code of coduct; SEA to be reported and dealt with as per the law • Taking action for women to be seen and engaged as valuable partners along the entire value chain: design, marketing, sales, and after-sale services • Promote education approaches to reinforce social inclusion • Stakeholder engagement measures to identify and take into consideration possible social tensions and conflicts within communities
Supply chain	Awareness raising on E&S risks (e.g. child labor) in supply chains of solar equipment	• Awareness of CFIs, solar companies of supply chain E&S risks

Source: ECREEE's ESRM Sector Guide on Off Grid Standalone Solar for Financial Service Providers

ANNEX 4

E&S SCREENING TOOL FOR IDENTIFYING RED FLAGS

Section A. Company details		
Company name:		
Company type:		
Year of establishment		
Short description of the company core business:		
Company Address: *(Name of the company / Street, Avenue, etc. name and number / Village / City / State/ Country/ Postal Code)*		
Contact person for E&S issues: *(Name and title / Phone /E-mail*)		
Name and title of the person filling the questionnaire		
Website *(if any)*:		
Section B. Business activities (solar sector)		
Total number and value of business transactions over the last year in the solar photovoltaic systems sector):		
Type of solar photovoltaic systems	**Number**	**Value** *(specify currency)*
Solar Home Systems		
Stand-alone Solar Systems – Pico PV products		
Solar Irrigation Power Systems		

Other *(specify)*		

Section C. Environmental and Social Risk Management		
What kind of environmental and social risks does the company currently have to manage?		
Is the company involved in any of the activities list on the exclusion in Annex 1 of the ESMS? If yes, which one?	**Yes**	**No**
Other E&S issues:		
Are there any court & criminal cases, legal actions, employee grievances or public controversies involving working conditions, payment of wages, occupational health & safety? Please provide details if the answer is yes.	☐	☐
Are there any court cases, legal actions, community grievances or public controversies involving waste disposal? Please provide details if the answer is yes.	☐	☐
Any community grievances and public controversies around land-related issues (applicable to installations on ground.)	☐	☐
Are there any court cases, legal actions, community grievances or public controversies involving water usage? Please provide details if the answer is yes.	☐	☐
E&S issues in supply chains (e.g. reputational risks due to well-known poor labor conditions of panel or other equipment manufacturers?)	☐	☐
Is there any negative media publication about client and its existing and proposed project? Please provide details if the answer is yes.		
Is there any negative campaign or agitation against the company or any of its projects (existing or proposed project) by NGO? Please provide details if the answer is yes.		
Has the company paid excess charges or fines/penalties for non-compliance with HSE regulations and standards in the last two years? (please attach copies of most recent inspection report)	☐	☐
Is the company exposed to potentially significant HSE liabilities, such as those arising from land / groundwater contamination, related to the company's past or ongoing operations? If yes, specify magnitude	☐	☐

Has the company had any significant accidents or incidents in the last two years (e.g. oil spills, fires) involving deaths or multiple serious injuries and/or significant environmental damage?		
Other E&S issues		

E&S Summary based on initial screening

FATAL FLAWS ANALYSIS

Topic	Point of Attention	Yes	No
Exclusion List	Does the project belong to the Exclusion List		
Excessive E&S risks	The potential E&S impacts cannot be mitigated reasonably		
Reputational risk	poses a risk of significant reputational risk in national or local media		
Past non-conformance	The project has a history of serious negligent and non-conformance with E&S regulatory requirements, legal actions and known community grievances & public controversies		

Recommendation	Consider the project (All the above response are "No")	Reject the project (at least one of the above response if "Yes")

INITIAL E&S CATEGORIZATION

Social and Environmental Category, Risks and Mitigations	
Recommended Social and Environmental Categorisation	
Social and Environmental Categorisation Rationale	
Initial determination of E&S impacts	
Recommended Mitigations:	

Signature of PIF or TF Officer:	**Date:**
Signature of E&S Champion:	**Date**

ANNEX 5

E&S DUE DILIGENCE AND SITE VISIT CHECKLIST

Section A. Company details	
Company name:	
Company type:	
Project ID	

Section B. Environmental and Social Due Diligence & Site Visit Checklist

	Visual observation	**Documentary evidence**
E&S Policy & organizational capacity		
• Does the company have an Environmental and / or Social Policy*?* *(If yes, please attach any documents that can serve as evidence of such policy)*		Review and policy documents
• Does the company conduct any E&S monitoring visits with its business customers?		Monitoring reports
• What is the organizational arrangement for managing EHSS issues/risks?		
• Names of the officers responsible for EHSS management,		organizational chart with names of the responsible officers
Training		

	Visual observation	Documentary evidence
• Is the EHSS team adequately qualified?		Training records
• Is there a requirement for training for staff in EHSS matters?		Training calendar
Regulatory compliance		
• Is the company in possession of all required HSE permits and approvals (please attach copies)		• Review all environmental clearances
• Does the company have a regulatory register to understand the applicable social and environmental legislations?		• See the register • Are relevant legislations listed? • Does it contain international conventions as well?
• Does the company have a compliance register as well?		
• Is the company required to report to any of the govt department?		• Copies of reports submitted to various government department on E&S aspects • Any correspondence with the regulatory authorities.

	Visual observation	Documentary evidence
Working Conditions and Management of Worker Relationship		
• Do you have a Human Resource (HR) Policy for your employees?		• Review the HR policy • Does it contain all clauses of employment, retrenchment, benefits and disciplinary actions? • Is the policy readable, understandable and accessible to all? Is it kept at some common place as well? • Review the grievance mechanism and grievance records
• Does the policy include clear terms and conditions of employment and worker's rights related to hours of work, wages, overtime, compensation, benefits, etc.		
• What policy, if not HR, governs the requirements of employment, like roles, responsibilities, working hours, wages etc.?		

	Visual observation	Documentary evidence
• Are employees aware of the policy?		
• Is there a grievance mechanism for employees? How often has it been used in last 1 year and what are the most common grievances?		
• How many staff are employed or are anticipated to be employed by the client (number, gender breakup and organogram)?		
• How are the general and specific working conditions, leaves, wage rates, working hours etc. communicated to the employees? • Is it through the appointment letter? Any other medium?	• HR policy on display at any notice board? • Shift hours, wage rates etc. displayed?	See a sample appointment letter
• Do you have a policy on non-discrimination? • Is there any work which is given to a particular workforce only? What is that?	Visual inspection of facilities provided	
• How do you monitor the minimum age restriction? What documents do you refer for ensuring it? • What is the policy on child labor or minimum working age?		Look at HR files of 12 or more employees and workers
Occupational Health and Safety		
• Do you have a workplace safety policy? Are the employees		• Copy of safety policy

	Visual observation	Documentary evidence
insured? What benefits does that cover? • Does the company have qualified internal designated coordinators, officers, or other staff responsible to oversee OHS issues? • What are the occupational hazards of working at this site/facility? • How do you manage these hazards? • What all safety equipment and PPEs are provided? • Do you have SOPs commensurate with Health and Safety Risks of the project(e.g. working at height, hot-work, excavation and trenching, etc.? • How do you ensure your contractor follow these SOPs and safety policy? • Does the company conduct regular OHS training for its workers and employees?		• Proof of work force insurance • List of hazardous chemicals • List of PPEs provided
• Any accidents at the site? • Any loss of life in recent past? Ever? • Serious injuries? What were the reasons? • Does the company have a clear, documented workplace incident and accident tracking system?		Latest accident or incident reports

	Visual observation	Documentary evidence
• Does the company have a Code of Conduct for workers? *If yes, attach copy* • Does the company provide internal training on Gender Based Violence?		
• Does the company have a monitoring system for workplace conditions and safety (e.g. regular internal audits, field visits by company OHS staff/ coordinators etc.?)		
Supply Chain		
• How do you ensure that no child labor or forced labor is engaged in your supply chain?		Review the suppliers audit report, if available
Waste management		
• Does the company have any policy or process for collecting used batteries (both lead acid and lithium ion), as well as used units and equipment from customers? • Does the company have any policy or process for collecting, sorting, recycling and disposal of used lead acid and lithium ion batteries (or, units containing such batteries) or any other used material resulting from solar systems installation process and subsequent use?		Review the policy Review buy back arrangements Review records of waste generated and their disposal methods Review contracts for management of waste

	Visual observation	Documentary evidence
• Does the company have any buy-back agreements with equipment manufacturers as part of its waste management approach? • Does the company systematically collect use batteries and/ or units from its consumers? • Does the company inform end users on the e-waste issue and provide them with information on proper e-waste management? • Does the company inform end users on other environmental issues? i.e. overexploitation of water resources*? *Only in consideration in case of solar water pumping installation activities*		
Environmental pollution		
▪ Water consumption (litre/year); is there any treatment of raw water? Do you monitor water consumption and analyze the data to find ways to consume less? ▪ Wastewater treatment: where does this take place? On-site or at a central/municipal-run Waste Water Treatment Plant (WWTP); what are the monitoring parameters you are required to provide/measure; Please provide details of the wastewater		

	Visual observation	Documentary evidence
treatment process and point of discharge of treated effluent. ▪ Hazardous materials (HM): Do you use or generate HM in your operations? If so, what types (e.g. explosive, corrosive, flammable, etc.)? Describe management of hazardous materials on site to ensure proper handling/disposal. ▪ Please list all sources of air emission – ball mill/spray drier/boilers/incinerator, etc. please provide information on their size. Do you monitor the air emissions from stacks? Please list all stacks together with fuel used and also details on air pollution control device provided. ▪ Copy of environmental monitoring reports – ambient air quality, stack emissions, noise levels, treated wastewater quality, workplace air quality etc. ▪ Cooling agents: specify which products are used, how these are managed and the safety measures you have in place to protect workers; ▪ Describe efforts and technical interventions to minimize fire risks at facilities. ▪ Which fire code (national and/or international) will building and premise design and construction conform to (e.g. U.S. NFPA, NBC)? ▪ Describe planned initiatives on energy and water efficiency (e.g.		

	Visual observation	Documentary evidence
energy savings from using prefabricated housing units, solar systems, etc), and on material re-use/recycling. ▪ What are expected water/energy usage levels (cbm/kWh) during construction and during operation?		
Emergency preparedness		
• Do you have an Emergency Preparedness Plan? • Does the Plan have provision for mock drills, trainings etc.?	Emergency Preparedness Plan	See the plan
General housekeeping		
• Evidence of liquid and solid wastes in the workplace • High levels of noise (intermittent or continuous) • Strong smells/irritants • Access, fire risk		
Community engagement		
• What grievance mechanism is being used by community? • Is there any other channel of logging the grievances? • How long does it take to resolve the grievance? Please tell a typical example from registering to closing of the grievance and communicating the closure to the grievant.		• Review the Grievance recording system • What kinds of grievance are more common? • Is there any record of closing the grievance or communicating

	Visual observation	Documentary evidence
• What kind of grievances are more common and why?		the redressal of grievance back to the grievant?

ANNEX 6

ESDD REPORT OUTLINE

Using the information collected as part of the previous Annex, the E&S champion should prepare an ESDD report as per the following outline.

1. Project Description: (including the site and environmental and social setting, surrounding land uses).

2. Environmental and Social Categorization Rationale: specify the Category of the investment according to the guidelines in Appendix 4 and give the basis for the rationale.

3. Client Social and Environmental Management Systems: (the processes by which the Client manages environmental and social performance, including community engagement activities). This includes the ways in which that Management is

organized in the Client. This section should also cover compliance with national regulatory requirements.

4. Environmental aspects: This section should explain the sources of air pollution, water pollution, solid and hazardous wastes, noise, chemical hazards and emergency management, resource conservation and energy efficiency measures

5. Resource utilization: Water, Construction material, Other

6. Sensitive receptors: Local human settlements, local ecologically sensitive areas and protection and conservation of biodiversity, sites of cultural importance

7. Social Issues: Land acquisition, impact on local livelihood, displacement of communities, stakeholder engagement and consultation

8. Labor relations: Description of existing HR policies, OHS, labor complaints.

9. Other project specific issues

10. Recommended corrective actions: (for performance gaps, recommend corrective actions corresponding schedules, indicate priorities, and advise as to how to incorporate these into the Investment Agreement as either Conditions Precedent or Management Actions). An Environmental and Social Action Plan (ESAP) should be

compiled with actions identified, following the template available in Appendix 11 of the ESMS

11. Summary and recommendations

12. Financing covenants/conditions

ANNEX 7

ENVIRONMENTAL AND SOCIAL ACTION PLAN TEMPLATE

Client:					
Client Contact Details:					
Date:		**Date of next review:**			
Aspect	**Description of the action**	**Responsible Person**	**Date to be completed by**	**Status**	**Level of Compliance**
Social and Environmental Management Systems					
Labor and Working Conditions					
E-waste management					
Occupational health and safety					
End user's health and safety					
Stakeholder engagement & grievance mechanism					
Land-related issues (solar business to verify that end users have adequate mitigation measures in place)					
Other issues					

ANNEX 8

ENVIRONMENTAL AND SOCIAL MONITORING REPORT

All projects are required to submit this report on an annual basis.

Please provide responses to the questions below. Please include additional sheets or attachments as required to provide details on questions that have been answered Yes.

Project name:			
Location:			
Completed by (name):			
Position and contact details:		**Date:**	

Report Covering Period:	
From:	**To:**

Information on Potential Environmental and Social Risks
Please list all new and existing E&S risks (please add rows as needed):

E&S issues at approval	**Current E&S status/any changes since last report**
• Have the conditions precedent been met?	
▪ Are you in compliance with the regulatory requirements?	
▪ Appropriate action is taken on complaints, orders, directives, claims, citations or notices from any authority under any applicable law or local requirements	
▪ on-going stakeholder engagement is performed and that a grievance mechanism for effected	

communities is maintained and that all grievances are dealt with accordingly.	

Social & Environmental Management System (ESMS) Information

Policies & Processes	***Yes/No***	
Have there been any updates to the Environmental and Social Policies adopted by your organization?		If yes, please provide a copy of the updated policies, including date when it was issued and reasons for the same.
Please describe any activities for the last six months for staff training and other internal communication (including number of staff trained).		
State any difficulties and/or constraints related to the implementation of E&S procedures.		
Please describe how you ensure that you are operating in compliance with national laws and regulations.		
Do you review the E&S performance at your facility and all your installations?		If yes, please describe the process including any environmental and social considerations if applicable.
Over the past six months have you continued to be in compliance with the relevant environmental, health and safety regulations?		If yes, please describe the process.
Monitoring	***Yes/No***	

Policies & Processes	***Yes/No***	
Please provide details of any accidents/litigation/complaints/regulatory/ notices and fines: Any incidents of non-compliance with Applicable Requirements. Covenants/conditionality imposed upon you as a result of any non-compliance		
Reporting	***Yes/No***	
Is there an internal process to report on E&S issues to senior management?		If yes, please explain process, reporting format and frequency.
In the past 12 months have you prepared any environmental and social reports apart from the ones submited to TDB.		If yes, please provide copies of these reports.
Do you have a process to inform TDB of any material change to the business?		
Have you informed TDB of any emergency incidents events during this period?		If yes, please give the date of report.

E-waste management		
Total e-waste generated during the reporting period? (for each caetgorty of waste such a broken panels, batteries, etc.) (use an additional sheet to include the information)		
How was this waste disposed off (include quantity agaisnt each disposal method)		
Any community and/ or regulatory complaint related to management of waste?		
Other issues	***Yes/No***	
Non-compliance with national legislation and regulations		
Complaints from regulatory agencies, interest groups, or local communities		
Work-related fatalities or serious work-related injuries		
Any legal action		
Allegations or indications of corrupt practices		
Fines, penalties or increased permit charges		
Negative attention on the part of the media or NGOs (non-governmental organizations)		

Other material environmental and social issues affecting your operations during the reporting period		

Cost savings through process efficiency, waste minimization or other schemes, energy savings, ISO certification		
Reduction of polluting emissions into the environment		
Increased diversity/gender balance in workforce and management		
Higher HIV/AIDS awareness in the workplace/community		
Facilitation of financing for less empowered groups		
Citations or awards		
Positive media or NGO attention		

Section 3: Environmental and Social Monitoring Data

This section is valid for clients involved in manufacturing of off-grid solar products

(a) Ambient Air Quality

Sample Frequency (e.g. quarterly)	Ambient Air Quality Parameter	National Regulatory Limits and units	Actual Performance (Annual average)
	Particulate Matter (PM_{10})		
	Annual arithmetic mean		
	Maximum 24 hour average		
	(List other relevant parameters)		
	Particulate Matter (PM_{10})		
	Annual arithmetic mean		

Sample Frequency (e.g. quarterly)	Ambient Air Quality Parameter	National Regulatory Limits and units	Actual Performance (Annual average)
	Maximum 24 hour average		
	(List other relevant parameters)		

Single Point Air Quality Monitoring

Sample Frequency *(eg. quarterly)*	*Required Laboratory Analysis for Collected Samples*	*National Regulatory Limits and units*	*Actual Performance (Annual average)*
Monitoring Location (please specify)			
	Particulate matter (PM_{10})		
	(List other relevant parameters)		

Sample Frequency ***(eg. quarterly)***	***Required Laboratory Analysis for Collected Samples***	***National Regulatory Limits and units***	***Actual Performance (Annual average)***
Monitoring Location (please specify)			
	Particulate matter (PM_{10})		
	(List other relevant parameters)		

(b) Ambient Noise

Sample Frequency ***(e.g. quarterly)***	***Ambient Noise Parameters (specify location)***	***National Regulatory Limits and units***	***Actual Performance (Annual average)***
	Residential, institutional, educational receptors, Daytime (07:00-22:00 hours)		
	Residential, institutional, educational receptors, Nighttime (22:00-07:00 hours)		
	Industrial, commercial receptors Daytime (07:00-22:00 hours)		
	Industrial, commercial receptors, Nighttime (22:00-07:00 hours)		

(c) Wastewater discharge

- Please describe the water course(s) which the effluent is discharged into (e.g. river, municipal system, sea).
- If the effluent is treated prior to discharge from the site please describe the level of treatment provided.
- If the effluent is discharged into a municipal system please confirm the level of treatment provided and where the municipal system discharges to.

Sample Frequency (e.g. quarterly)	***Required Laboratory Analysis for Collected Samples***	***National Regulatory Limits and Units***	***Actual Performance***
	pH		
	Biochemical oxygen demand (BOD_5)		
	Chemical oxygen demand (COD)		
	Oil and grease		
	Total suspended solids (TSS)		
	Total coliform bacteria, Most Probable Number (MPN) or plate count (PC)		
	Ambient temperature of receiving waters at edge of zone where mixing with effluent takes place (if not defined, 100 meters from discharge point).		
	Heavy Metals, Total		
	(list other parameters)		

(d) Waste and Hazardous Materials Generated (please provide info for all facilities):

Hazardous and Non-hazardous Waste Type	Annual Quantity and Units	Method of Storage and Handling	Method of Recycling, Reuse or Disposal

Section 4: Health and Safety Monitoring Data

Occupational Health and Safety

INCIDENT STATISTICS REPORTING

Type of incident	Total no. of incidents	Date of each incident	Cause	Corrective actions
Fatality				
Lost time incidents[6]				
Total number of lost workdays[7] resulting from incidents				
	Total man-hours worked this reporting period	**Incidence this reporting period:**		**Incidence last reporting period**
Total man-hours worked (total hours worked by all employees) during the reporting period and				

[6] Incapacity to work for at least one full workday beyond the day on which the accident or illness occurred.

[7] Lost workdays are the number of workdays (consecutive or not) beyond the date of injury or onset of illness that the employee was away from work or limited to restricted work activity because of an occupational injury or illness.

Incidence calculation.			

Note: **Incidence = total lost workdays/total hours worked**

EHSS training details:

Training topic	Date of training	No. of people trained

Employee Workplace Monitoring

Sample Collection and Analysis Frequency	*Required Workplace Monitoring Parameter*	*National Regulatory Limits and Units*	*Actual Performance in (Annual average)*
	Particulate (Inert or Nuisance Dust)		
	(Other Parameters)		
	Temperature		

Sample Collection and Analysis Frequency	***Required Workplace Monitoring Parameter***	***National Regulatory Limits and Units***	***Actual Performance in (Annual average)***
	Workplace Noise		
	(Other Parameters)		

Fire Safety Monitoring

Fire Safety Verification Activities	***Date(s) Performed***	***Observed Deficiencies***	***Corrective Actions and Schedule For Implementation***
1. Fire Drills			
2. Inspection and certification of fire detection and suppression electrical and mechanical systems.			
3. Portable fire extinguisher inspectio			

Fire Safety Verification Activities	***Date(s) Performed***	***Observed Deficiencies***	***Corrective Actions and Schedule For Implementation***
n, refilling/recharging			

ANNEX 9[8]

ADDITIONAL RESOURCES FOR OFF GRID SOLAR PROJECTS

A. SAMPLE OCCUPATIONAL HEALTH AND SAFETY GUIDELINES FOR SOLAR COMPANIES

Occupational Health and Safety guidelines for solar companies

You should adapt the checklist to your particular sector or workplace and to the characteristics of the workforce as specific workers' groups may have specific needs. Some extra items may need to be covered, or some points omitted as irrelevant.

For practical and analytical reasons, a checklist presents problems/hazards separately, but in workplaces they may be intertwined. Therefore, you have to take into account the interactions between the different problems or risk factors identified.

Solar company will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the work areas, and specific threats to women. It will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards. OHS Guideline will also include steps, as relevant, for SEA/SH and HIV/AIDS prevention.

Issues to be addressed:

- Are managers and workers aware of the potential risks related to solar power installations and committed to their prevention?
- Has the organization adopted a practical participative approach (worker involvement) to problem-solving?
- Have appropriately trained staff undertaken comprehensive risk assessments?
- Are all reported cases of accidents and incidents being managed?
- How is the effectiveness of the measures taken to prevent risks caused by solar power installations across their life cycle being evaluated and monitored?

Checklist for the prevention of Occupational Health and Safety Risks

[8] Source: ECREEE's ESRM Sector Guide on Off Grid Standalone Solar for Financial Service Providers

For example:

- Does the hazard exist at the workplace?
- Are the hazards eliminated, and where not possible controlled to minimise negative influences on the safety and health of all people involved?

Answering 'NO' to one of the following questions indicates a need for improvements to be made in the workplace.

QUESTIONS		Yes	No
1. Installation, maintenance, decommissioning			
Work organization, psychosocial risks			
1.1	Is information on the solar system, the electrical installation and the building that is required to perform the work safely available to the workers?	☐	☐
1.2	Is training provided on safe working procedures?	☐	☐
1.3	Is there sufficient cooperation, communication and exchange of information among the different actors involved (for example building owner and the workers) in order to allow the safe performance of the work?	☐	☐
1.4	Are workers involved in the workplace risk assessment?	☐	☐
1.5.	Is appropriate PPE supplied according to the OHS risks identified and staff is trained in its use and maintenance?	☐	☐
Working at height, slips and trips, falls			

1.6	Can work at height in general, and in particular on slanting roofs be avoided?	☐	☐
1.7	When ladders are used to reach the place of work at height, has the appropriate ladder been chosen and is it used safely?	☐	☐
1.8	When roof work is necessary, has the condition of the roof been assessed to ensure that the roof is dry and free from slipping and tripping hazards such as moss, vent pipes, equipment lying around, etc.?	☐	☐
1.9	In the case of skylights or holes/cavities, are they safeguarded?	☐	☐
Electricity-related risks (PV), burns/scalds			
1.10	Are only qualified persons allowed to work on electrical equipment?	☐	☐
1.11	Are workers aware that low voltages can cause surprise shocks and thereby falls?	☐	☐
1.12	Are workers aware that small amounts of sunlight can produce a voltage potential in the PV system and shock or arc-flash hazards?	☐	☐
1.13	Are workers provided with suitable PPE when risk reduction measures at source are not sufficient?	☐	☐
1.14	Are workers accompanied always by at least one colleague when working on electrical systems, thereby eliminating lone working?	☐	☐
Hazards of musculoskeletal disorders			

1.15	Is work arranged so that manual handling operations, such as lifting and carrying are avoided and, where not possible, reduced to the minimum?	☐	☐

B. REQUIREMENTS FOR HR POLICY FOR SOLAR COMPANIES

HR Policy Requirements

Solar company will have in place an HR policy that expresses its commitments, at a minimum to:

(1) comply with all relevant national labor laws and regulations;

(2) promote the fair treatment, non-discrimination, and equal opportunity for workers;

(3) establish, maintain, and improve the worker-management relationship;

(4) allow workers' organizations and collective bargaining;

(5) have in place a grievance mechanism for workers;

(6) explicit commitment not to employ forced labor or child labor, including not hiring workers below minimum age, as defined by national law and not employ children in hazardous work.

(7) include a code of conduct for workers that provides for rules of appropriate behavior, including prevention of sexual exploitation and abuse and sexual harassment and plan for training on and disseminating the code of conduct;

(8) maximize women's employment by hiring women employees;

Solar company will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of national law. It will provide workers with documented information that is clear and understandable, regarding their rights under national labor and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur. It will provide and inform workers of an internal grievance process to raise their workplace concerns.

Code of Conduct for Workers on SEA/SH: Core Principles

The following core principles should be at the center of the Code of Conduct adopted by the contractor, and apply to all its employees without exception:

- Solar companies are obliged to create and maintain an environment which prevents gender-based violence and promotes the implementation of the code of conduct. Managers at all levels have particular responsibilities to support and develop systems which maintain this environment.
- All codes of conduct to for the prevention and mitigation of SEA/SH should contain clauses that state that:

    i. Sexual Exploitation and Abuse and Sexual harassment constitutes an act of gross misconduct, providing grounds for sanctions, penalties and/or termination of employment – there will be zero tolerance for any gender-based violence case on the work site and in its surroundings.
    ii. Sexual interactions by employees at any level with individuals under the age of 18, , are prohibited. Mistaken belief regarding the age of the individual is not acceptable as a defense.
    iii. Exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour, are prohibited.
    iv. Sexual interactions between contractors' employees at any level and members of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding, promise or actual provision of a benefit (monetary and non-monetary) to community members in exchange for sex – such sexual activity is considered ''non-consensual'' within the scope of this Code.

- All managers and employees should receive a clear written statement of the company's requirements with regard to preventing gender based violence, and a mandatory training course should be provided for all employees before they commence work on site which ensures that they are familiar with these principles
- The manager will ensure that the principles regarding gender based violence are displayed prominently at the work site in places where they will be seen be all employees.
- The contractor also commits to raising awareness on the code of conduct and its associated grievance mechanisms within the project affected communities.

- The code of conduct will outline procedures for community and staff members to lodge a complaint to the grievance and accountability mechanism to be established, should the code of conduct be violated.

Solar companies should also develop a Gender-Based Violence Action Plan, which shall include the following items:

- Operating Procedures related to the prevention and mitigation of Sexual exploitation and abuse and sexual harassment (SEA and SH). On the work site, as well as to the management of SEA/SH cases, including details of the internal reporting & sanctioning mechanisms that solar companies will put in place and reporting mechanisms for the community in which solar companies are working.

- An awareness-raising strategy should aim at sensitizing solar company employees on the provisions of the code. The strategy will also highlight how the affected communities will be made aware of the code of conduct and the grievance and complaint mechanism that they can use should the code be violated. The strategy shall be accompanied by a timeline, indicating the various sensitization activities through which the strategy will be implemented and also the related (expected) delivery dates.

- A monitoring strategy, aimed at measuring the knowledge and level of awareness possessed by solar company employees on the topics covered by the awareness-raising strategy, and indicating the instruments (e.g. perception surveys, random interviews with employees etc.) intended to be used for that purpose.

- Support measures to be made available for employees who are victims of GBV, including provisions for time off (to allow reporting at competent authorities, seeking of health/psychological assistance etc.), financial support (where and if applicable) etc.

- Support systems should be identified for referral of community members that experience violence at the hands of a solar company employee, if such a case should arise

C. GUIDANCE ON USED BATTERY COLLECTION AND RECYCLING

Introduction

Many countries and communities are already struggling with contaminated sites and soil pollution from unregulated car battery recovery and recycling. Unsound end-of-life management and recycling can cause severe and even fatal lead poisoning of people working in the battery recycling sector. Batteries used in solar systems can be of two main types – lead acid and lithium ion. Both present different challenges with disposal and recycling.

The health of people living around small and industrial-scale lead smelters, in particular children, are severely impacted for life. A recent report by the Lead Recycling Africa Project and Oeko-Institute revealed that already every year more than 1.2 million tons of used lead-acid batteries and 800,000 tons of lead require sound management in Africa.

Environmentally, when disposed alongside household trash, batteries end up in landfills/waste dumps. As the battery casing corrodes, chemicals leach into the ground water from where they contaminate the water bodies. Acid and lead particulates also contaminate the soil and become airborne when dry. Health-wise, cadmium and nickel are known human carcinogens, lead has been linked to birth defects and to neurological and developmental damage, and mercury is also highly toxic, especially in vapor form. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioral problems, and in adults, lead can cause memory loss and lower the ability to concentrate as well as harm the reproductive system.

In terms of lithium ion batteries, the recycling value is generally considered to be low. Therefore, the emphasis would be on encouraging safe collection of used units and proper disposal. Recycling of lithium ion batteries is possible but, according to research and practice, makes little economic sense. Lithium ion batteries can be recycled, but only at specified locations. Projects are currently underway in Europe, the United States and Japan to develop effective and feasible recycling technologies with a complete life cycle analysis of recycling.

Guiding principles for recycling and disposal policy of a solar company

If solar company has an existing battery collection and/or recycling policy, this should be submitted with the loan application. It is preferred that batteries are recycled to potentially reuse some of its components, where economically and technically feasible. This would be equally applicable for expired batteries and the batteries that will be replaced within the warranty period due to manufacturing fault or reasons outlined in warranty conditions.

The company shall systematically collect used battery units and engage with communities on the importance of recycling, if such program is in place. The suggested options that can be considered are:

A. Collection of Batteries by solar companies: Solar company representatives will make arrangement to collect the battery units from the consumer and store it in the local offices. Solar company will take necessary measures to ensure safe storage of the batteries. It may be feasible for solar company to send the warranty expired batteries to a central location.

B. Potential battery disposal / recycling options can be as follows:

- Buy-back arrangements with manufacturers: Solar company can put in place buy-back arrangements with the battery manufacturers and ensure safe transportation of the batteries to the manufacturer. SHS company and manufacturers can mutually decide on cost sharing of collection and transportation of expired batteries, for example sign a Memorandum of Understanding signed between them;
- Recycling at own facilities: Larger solar companies may consider establishing their own recycling facilities;
- Recycling at centralized locations in the country: If recycling facilities for either lead acid or lithium ion batteries exist, solar companies must use those that are inspected the government and are considered safe and complainant with national regulations and World Bank standards;
- Disposal: Lead acid batteries are hazardous waste. Lithium ion batteries may also qualify as household hazardous waste.[9] Solar company will ensure that the batteries are disposed in a particular designated area ensuring environmental and occupational health and safety in line with World Bank E&S standards and Environmental, Health, and Safety Guidelines of the World Bank Group. Solar company will also comply with the government regulations, if any, regarding disposal of any of the components used in the battery units.

[9] In some countries, they are classified as non-hazardous waste.

D. SAMPLE STAKEHOLDER ENGAGEMENT PLAN AND GRIEVANCE MECHANISM FOR SOLAR BUSINESSES

I. Sample Content of a Stakeholder Engagement Plan

A good **Stakeholder Engagement Plan** should:

- Describe regulatory, lender, company, and/or other requirements for consultation and disclosure.
- Identify and prioritize key stakeholder groups, focusing on Affected Communities.
- Provide a strategy and timetable for sharing information and consulting with each of these groups.
- Describe resources and responsibilities for implementing stakeholder engagement activities.
- Describe how stakeholder engagement activities will be incorporated into a company's management system.

The scope and level of detail of the plan should be scaled to fit the nature and needs of the project (solar businesses). A sample outline of a Stakeholder Management Plan can be as follows:

1. Introduction

Briefly describe the project, including design elements and potential social and environmental issues. Where possible, include maps of the project site and surrounding area.

2. Regulations and Requirements

Summarize any legal, regulatory, lender, or company requirements pertaining to stakeholder engagement applicable to the solar business operations (if any).

3. Summary of any Previous Stakeholder Engagement Activities (if applicable)

If the company has undertaken any activities to date, including information disclosure and/or consultation, provide the following details:

- Type of information disclosed, in what forms, and how it was disseminated
- The locations and dates of any meetings undertaken to date

- Individuals, groups, and/or organizations that have been consulted
- Key issues discussed and key concerns raised
- Company response to issues raised, including any commitments or follow-up actions
- Process undertaken for documenting these activities and reporting back to stakeholders

4. Project Stakeholders

List the key stakeholder groups who will be informed and consulted about the project. These should include persons or groups who:

- are directly and/or indirectly affected by the solar business
- have "interests" in the project that determine them as stakeholders
- have the potential to influence project outcomes or company operations

5. Stakeholder Engagement Program

- Summarize the purpose and goals of the program
- Briefly describe what information will be disclosed, in what formats, and the types of methods that will be used to communicate this information to each of group
- Briefly describe the methods that will be used to consult with each of group
- Describe how the views of women and other relevant sub-groups will be taken into account during the process
- Describe any other engagement activities that will be undertaken

6. Management Functions (*This is applicable to Energy Service Companies that may be involved in a Public Institution Projects*)

How will stakeholder engagement activities be integrated into the company's environmental and social management system and with other core business functions?

- Who will have management oversight for the program?
- What are the plans for hiring, training, and deploying staff to undertake stakeholder engagement work?
- What will be the reporting lines between community liaison staff and senior management?
- How will the company's stakeholder engagement strategy be communicated internally?
- What management tools will be used to document, track, and manage the process?
- For projects or company operations involving contractors, how will the interaction between contractors and local stakeholders be managed to ensure good relations?

7. Monitoring and Reporting (*This is applicable to Energy Service Companies that may be involved in a Public Institution Projects*)

Describe any plans to involve project stakeholders (including affected communities) or third-party monitors in the monitoring of project impacts and mitigation programs. Describe how and when the results of stakeholder engagement activities will be reported back to affected stakeholders as well as broader stakeholder groups?

8. Timetable

Provide a schedule outlining dates and locations when various stakeholder engagement activities, including consultation, disclosure, and partnerships will take place and the date by which such activities will be incorporated into the company's management system.

9. Resources and Responsibilities

Who within the company will be responsible for carrying out these activities? What budget has been allocated toward these activities? Indicate what staff and resources will be devoted to managing and implementing the Stakeholder Engagement Program. Integration of the community liaison function with other core business functions is also important, as is management involvement and oversight.

10. Grievance Mechanism

Describe the process by which people affected by the business can bring their grievances to the company for consideration and redress. Who will receive public/users grievances, how and by whom will they be resolved, and how will the response be communicated back to the complainant?

II. Sample Grievance Mechanism

Solar business especially Energy Service Companies providing services to Government and Public Institutions will set up a project-specific grievance mechanism (GM) for people to report concerns or complaints, if they feel unfairly treated or are affected by any of the activities.

For companies involved in the distribution of SHS equipment and for productive uses, will have to indicate in their transactions with users, the issues of warranty, what contact numbers to call in case they have challenges with the system or payments.

The mechanism will amongst other things: (a)provide information about project implementation; (b) provide a forum for resolving grievances and disputes at the lowest level;(c) resolve disputes relatively quickly before they escalate to an unmanageable level;(d) facilitate effective communication between the project and affected persons; (e) win the trust and confidence of project beneficiaries and stakeholders and create productive relationships between the parties. The mechanism is envisaged to be at multiple levels and will address such complaints, including logging, tracking, and resolving grievances promptly during and after the implementation of the Project.

The company will have dedicated person to be responsible for setting up and maintaining the GM that allows general public in the project area and affected communities or individuals to file complaints and to receive responses in a timely manner. The system will also record and consolidate complaints and their follow-up. This system will be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

The GM will be communicated to all stakeholders in the course of its community engagement activities, and will make public available a record documenting the responses to all grievances received. The GM will remain available throughout the project cycle. It is expected to address concerns promptly an effectively, in a transparent manner that is culturally appropriate and readily accessible to all project affected parties, at no cost and without retribution. It also allows for anonymous complains to be raise and addressed.

The GM should include the following elements. More details see Table below.

- Different ways in which users can submit their grievances, which may include submission in person, by phone, text message, mail, email or via a website;
- A lot where grievances are registered in writing and maintained as a database;
- Publicly advertised procedures, setting out the length of time users can expect to wait for acknowledgement, response, and resolution of their grievances;
- Transparency about the grievance procedure, governing structure and decision makers; and
- An appeals process (including the national judiciary) to which unsatisfied grievances may be referred when resolution of grievance has not been achieved.
- A separate process for dealing with local complaints about sexual exploitation and abuse and gender-based violence that is sensitive towards and protects the confidentiality of the complainant. Information should also be provided to victims about local services to provide medical and social support.

Grievance Management Process

Process	Description	Time Frame	Other Information
Identification of grievance	Face to face; telephone; letter; mail; e-mail; website; recorded during public/ community interaction; others The grievance can also be passed through other parties, such as the chief office because the public are more conversant with this office.	1 Day	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book) It will be prudent to have a grievance record book where the grievances are recorded for follow up. Grievances concerning sexual exploitation and abuse/gender-based violence should be treated as confidential. Only the nature of the complaint and the processing outcome should be recorded.	3-6 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law/ policy
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	3 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-8 Days	
Response signed off	Redress action approved at appropriate	8-15 Days	
Implementation /communication of response	Redress action implemented and update of progress on resolution communicated to complainant	5-9 Days	

If complainants are not satisfied with the grievance process, even after arbitration, the affected persons will still have the right to present their complaint through the court system.